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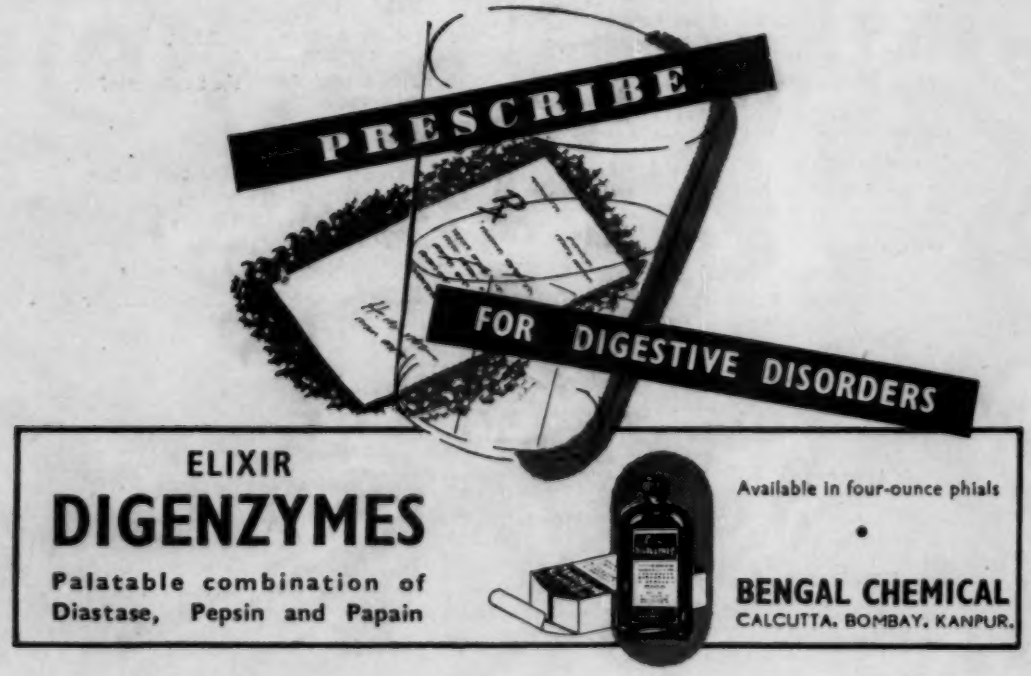

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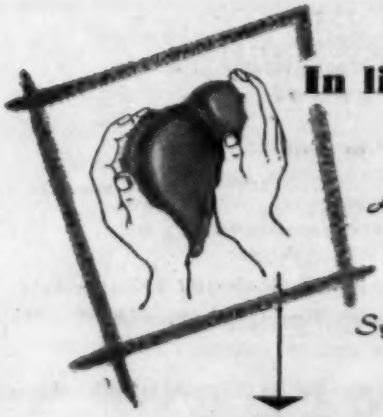

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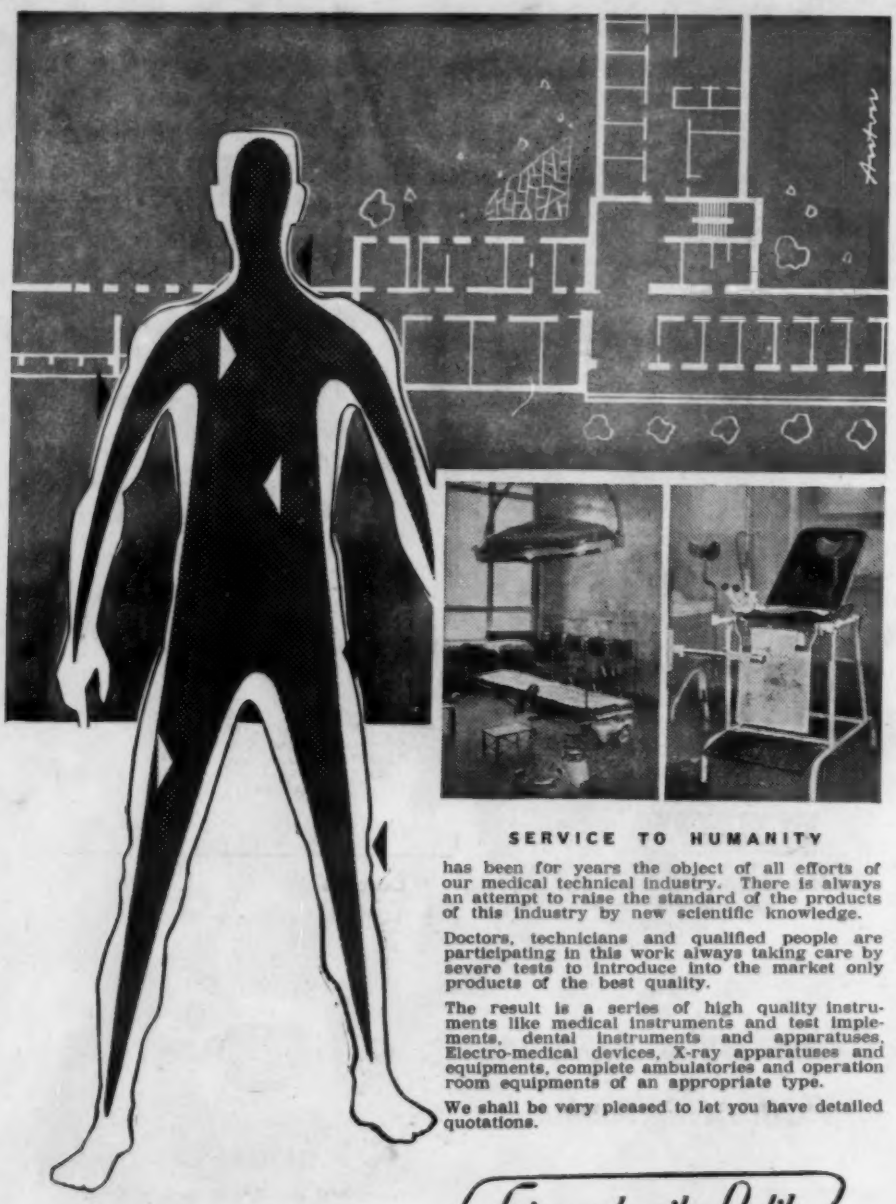

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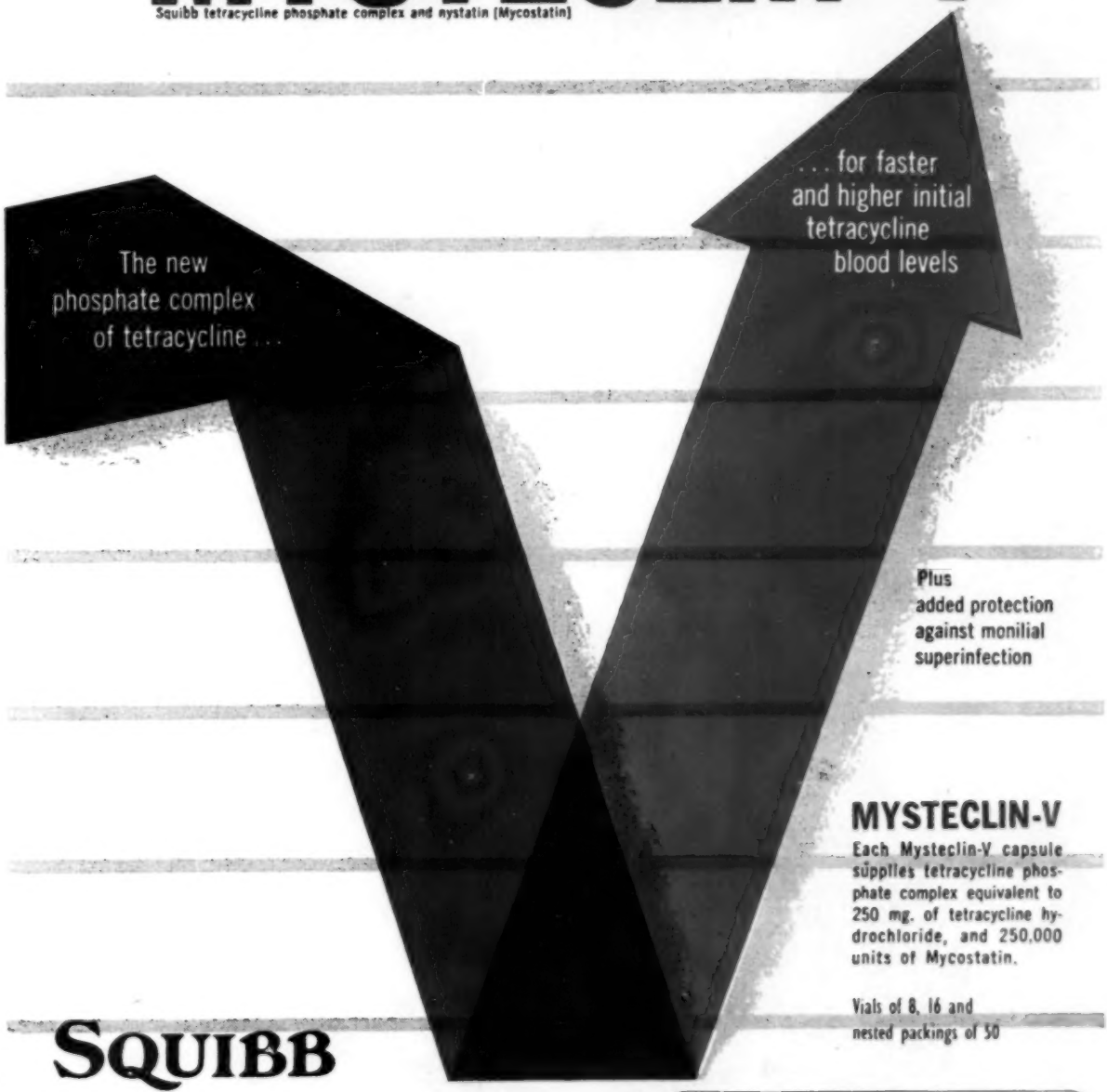

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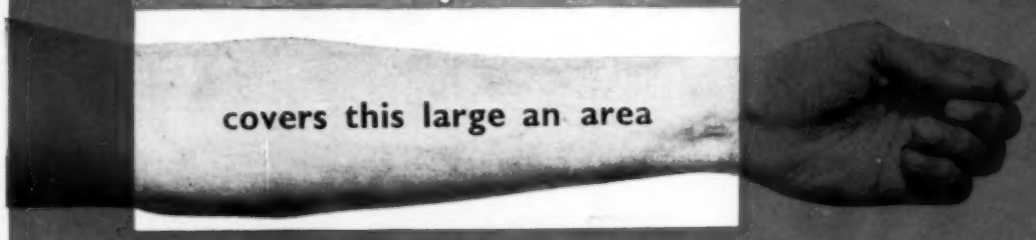

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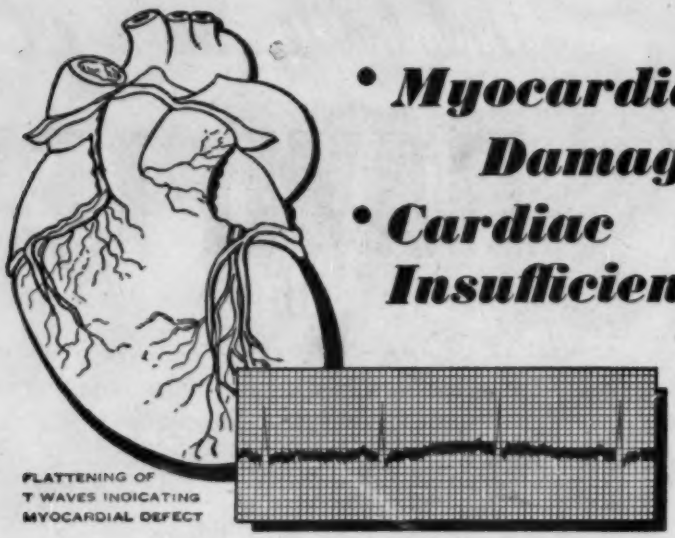

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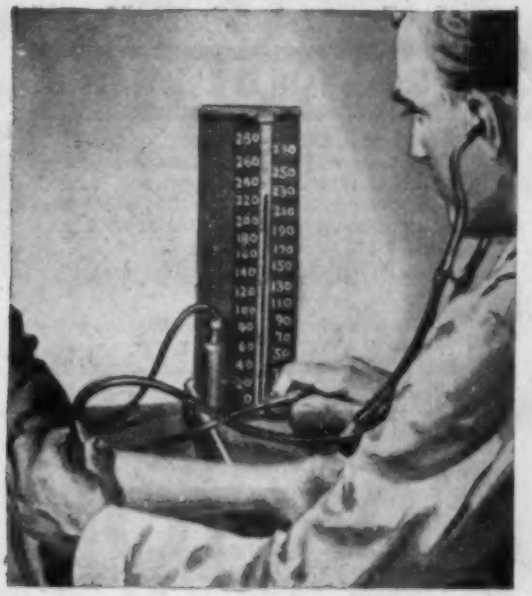

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References:
1. Walton, C. H. A.: Canad. M. A. J. 75:557, 1956.
2. Schwartz, E.: New York J. Med. 57:1571, 1957.
3. Rose, B.: Quart. Rev. Allergy 10:82. 1956.

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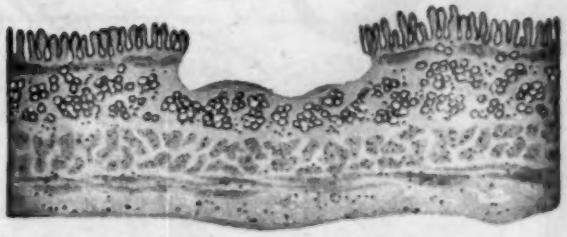

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ORIGINAL ARTICLES

NEW SYNTHETIC COMPOUNDS IN THE TREATMENT OF AMOEBIASIS*

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The problem of amoebiasis is worldwide and its treatment varied. Different forms of amoebiasis call for different methods of treatment but the main aim of the treatment is to obtain complete clinical cure from adverse symptoms and complete elimination of vegetative and cystic forms of *Entamoeba histolytica*. Many drugs such as emetine, vioform compounds, combination of chloroquin and iodo-hydroxyquinoline, carbarsone, camoform, antibiotics and chemotherapeutic drugs are used, either alone or in combination, to achieve a complete clinical cure which is not often possible with one single drug.

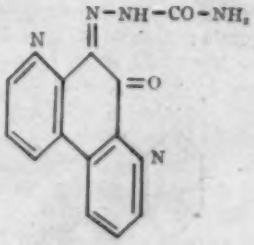
MATERIALS AND METHOD

Recently two new preparations 11'925 and 11'925C, chemically unrelated to any of the amoebicidal drugs so far known, were tried in human beings after being properly tested in animals.

I—PREPARATION 11'925:

It is a yellow odourless substance with a relatively bitter taste and slightly soluble in water (0·1 g. per litre).

It is semi-carbazone of 5,6-quinone-4,7-phenanthroline with the formula



It is available as tablets of 100 mg. each.

Chemotherapeutic properties—1. Amoebicidal actions: (a) *In vitro*, lowest amoebicidal concentration of 11'925 is 1:8000; and is comparable to vioform, carbarsone and aureomycin.

(b) *In vivo*, the amoebicidal effect was tested in rats. From the data it appears doses of 100 mg./kg. produce a clear cut reduction in number of amoebae but complete elimination was obtained after repetition of the dose. Other amoebicides in similar tests have to be given in doses of 75-300

*A preliminary report.

mg./kg. for the same length of time with the exception of emetine. Emetine is effective in doses of 2-5 mg./kg. but is considerably more toxic than the preparation 11'925.

Preparation 11'925 is absorbed in the intestine and excreted in active form in the bile and urine. In the blood of the rat also there is an amoebicidal level of 1 : 40 after doses of 500 mg./kg. and in the caecum in 1 : 40 to 1 : 60 after 100 mg./kg. per os. In guineapigs a rise in amoebicidal activities was also observed in 4-72 hours. It appears that this preparation may be effective in intestinal infections as well as hepatic involvements.

2. Antibacterial actions—This preparation shows a clear bacteriostatic action against Gram-negative and Gram-positive organisms and the antibacterial action is more marked than that of emetine (Table 1).

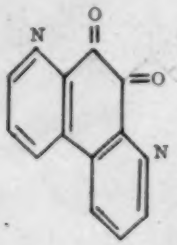
Toxicity—Following a single oral dose, this compound was found to be of low general toxicity and after repeated oral administration of therapeutic and even higher doses in various animals, renal lesions could be produced specially with large doses.

Dosage—Animal experiments suggested its use in both acute and chronic infections. In our clinical trial we used a dosage of 100 mg. to 200 mg. three times a day after meals for seven to ten days.

II—PREPARATION 11'925 C :

It is a yellow, odourless powder, slightly soluble in water.

It is 5,6-quinone-4,7-phenanthroline with the following formula :



It is available as tablets of 50 mg. each.

Chemotherapeutic properties—1. Amoebicidal action : (a) *In vivo* (rat). It shows marked amoebicidal action with 50-75 mg./kg. per os, for 5 days.

(b) *In vitro*. With a concentration of 1 : 16,000, good amoebicidal action was noticed.

2. Antibacterial action is shown in Table 1.

TABLE 1—SHOWING ANTIBACTERIAL ACTION OF NEW SYNTHETIC COMPOUNDS, VIOFORM AND EMETINE

Bacterial strain	Bacteriostatic concentrations			
	11925	11925 C	Vioform	Emetine
Esch. coli ...	1 :64,000	1 :20,000	1 :1,000	1 :1,000 ineffective
Shigella sonnei	1 :16,000	—	1 :1,000	Ineffective
Strept. faecalis	1 :256,000	1 :200,000	1 :256,000	Ineffective
Staph. aureus	1 :8,000	1 :200,000	1 :4,000	Ineffective
Salm. typhi	—	1 :100,000	—	—
Salm. para-typhi	—	1 :20,000	—	—

Toxicity—Acute oral toxicity of 11'925 C in the rat is 3·0 and in the rabbit 0·5 (LD 50 mg./kg. per os.). Chronic oral toxicity—it is well tolerated in 30 mg./kg. per os, in the rabbit and 100 mg./kg. in the rat, for 21 days. No histopathological change was noticed in any of the organs examined.

A total of 70 (indoor and outdoor) cases were treated with these preparations between 1956-1957. All the cases had either cystic or vegetative forms of *Entamoeba histolytica* in their stools except in 5 cases. All these 5 stool-negative cases had past history of amoebiasis. Out of these 5, one had salmonella infection, two giardia infection, one mixed infections and the last one had no detectable cause. Preparation 11'925 was tried in 21 cases, 11'925 C in 40 cases and combined treatment in 9 cases. Stool was examined before and after the course of treatment. Daily dosages of the preparations were changed according to the circumstances depending on the type of infection and side effects. No attempt was made to compare the effects of the two preparations with equivalent dosages as the preparation 11'925 could not be tolerated by most of the patients, preventing us to increase its dose beyond a certain limit, whereas 11'925 C dosage could be safely increased in the course of our trial. After a preliminary trial with 11'925 in early 1956, we adopted a course of treatment with the dosage of 600 mg. daily for acute cases, as a dosage higher than this could not be tolerated by most of the patients, unless combined with some gastric sedative. Even with this dosage it could not be continued for long because of its side effects ; hence its dosage was diminished to 300 mg. daily in the later part of our trial. The dosage of 11'925 C was however increased in the later part of our trial from 300 mg. to 500 mg. daily with negligible side effects. Also no attempt was made to distinguish rigidly

between pure intestinal and extra-enteral forms of amoebiasis for purpose of comparative evaluation of the two preparations regarding efficacy and tolerance. In most of the cases, on examination of stool, *Entamoeba histolytica* cysts were found besides thickened, tender caecum and colon and frequently an enlarged tender liver of some months' duration. It appeared to us that on clinical grounds alone, one could not be reasonably certain about the extent of extra-enteral involvement in these cases and thus clearly distinguish the pure extra-enteral forms. For this we have used the term amoebic hepatitis complicating amoebic dysentery. No definite cases of liver abscess or pulmonary amoebiasis were available for study with these preparations.

Results

Preparation 11′925 (Table 2):

Amoebic dysentery—Six cases had acute and nine had chronic dysentery. Of the 9 chronic cases, 3 had other infections, e.g., giardia, hookworm and *E. nana* infections. In the stools of five out of six acute cases, vegetative forms of *E. histolytica* were present. With a dosage of 600 mg. daily for 6 to 9 days, the vegetative form disappeared in three within a week but cystic forms persisted in two. In two of the patients where the vegetative form persisted, treatment had to be discontinued in one on the very first day due to persistent vomiting. In the other case, treatment was continued upto the sixth day but vomiting started on the 4th day probably interfering with the absorption of the drug. Clinical cure was achieved in two cases, symptomatic relief in other two, slight amelioration in another and no relief in one. Pain usually began to diminish, so also the number of stools from the 3rd day onwards.

Of the nine chronic cases passing *E. histolytica* cysts in their stools, seven were treated with a dosage of 300 mg. daily for 10 days, one with 400 mg. daily for 10 days and another 600 mg. on the 1st day and 400 mg. for the remaining 6 days. In the last case, vomiting started on the 1st day and hence the dose was diminished from 600 mg. to 400 mg. daily. Clinical cure was achieved in six, moderate relief in one and no relief in two of the cases. *E. histolytica* cysts disappeared from stool in eight of the nine cases.

Hepatitis complicating amoebic dysentery—Of the six cases of this group one had acute and the remaining five had chronic dysentery. All had cystic forms in their stools which disappeared after treatment. The acute case was treated with 600 mg. daily for 10 days. Four chronic cases were treated with a dosage of 300 mg. daily for 10 days and the remaining one with a dosage of 300 mg. daily for 5 days followed by 400 mg. daily for 5 days. Clinical cure was achieved in four, symptomatic relief in one and no response in one. Tenderness and size of the liver began to diminish in five out of the six cases within a week.

Side effects—Out of the 21 cases of this group, 18 had nausea and vomiting between 1st to 4th day. Three only did not suffer from any side effects. Nausea sometimes disappeared on continuation of the treatment.

Preparation 11′925 C (Table 3):

Amoebic dysentery—Seven had acute and twentytwo had chronic dysentery. Of the seven acute cases, one had hookworm and trichomonas infection. Of the twentytwo chronic, five had giardia or iodamoeba infection. Vegetative forms of *E. histolytica* were present in two and cystic forms in five of these acute cases. One of the acute case was treated with a dosage of 250 mg. daily for 10 days, 2 with 300 mg. daily for 9 to 10 days, two with 400 mg. daily for 8 days and 1 with 500 mg. daily for 10 days. The remaining one was treated with 300 mg. for 5 days followed by 400 mg. daily for 5 days. Stool became negative and clinical cure was achieved in all the cases. One of the acute cases had Salmonella infection with a past history of *E. hystolytica infection*. This case also responded to 11′925 C.

Of the twentytwo chronic cases vegetative form of *E. histolytica* was present in one and cysts in eighteen cases. No cysts or vegetative forms were found in the stools of four cases and the diagnosis here was based on previous history and clinical impression. Two of these later group had giardia infection. Eight of the chronic cases were treated with 300 mg. daily for 7 to 10 days, eight with 400 mg. daily for 10 days, three with 500 mg. for 10 days. Three had initially 300 mg. daily followed by 400 mg. for 9 to 14 days. Stool became negative both for *E. hystolytica* cyst and vegetative forms in all the cases except one where cystic form persisted after the treatment. Clinical cure was achieved in sixteen, symptomatic relief in one, moderate relief in three, slight relief in one and no relief in one. Motions and abdominal pain usually began to diminish from 3rd day onwards.

Hepatitis complicating amoebic dysentery—Of the eleven cases of this group, two had acute and nine had chronic dysentery. All the eleven cases had *E. histolytica* cysts in their stool. In the two

TABLE 2—SHOWING DETAILS OF THE CASES STUDIED WITH THE PREPARATION 11925 AND RESULTS

Case No.	Age (yrs.) Sex	Clinical features	STOOLS				Daily dosage in mg.	Days	Side-effects	Remarks
			Before treatment		After treatment					
			No.	Examination	No.	Examination				
1.	16 M.	Abdominal griping; thickened, tender caecum and colon	10	Veg. E.H.	3	Veg. E.H.	600	6	Nausea from 1st day, vomiting from 4th day	Slight amelioration of symptoms
2.	30 M.	Loose motions with pain; thickened tender caecum and colon	5	E.H. cyst	2	E.H. cyst	600	6	Nausea from 4th day	Better
3.	16 M.	Painful defaecation; tender caecum and colon	15	Veg. E.H.	2	Nil	600	9	High coloured urine from 3rd day	Cured
4.	55 F.	Lower abdominal griping; thickened and tender caecum and colon	15	Veg. E.H.	2	Nil	600	7	Nil	do.
5.	38 F.	Griping, tenesmus, fever, tender caecum and colon	25	Veg. E.H.	1	E.H. cyst	do.		Vomiting from 1st day. High coloured urine—3rd day	Except vomiting, other symptoms subsided
6.	21 M.	Loose motions; dull pain in right hypochondriac region; liver 2 fingers. Thickened and tender caecum and colon	8	E. H. cyst Giardia cyst	1	Giardia cyst —a few	600	10	Nil	Symptomatic relief. Liver size—diminished
7.	50 M.	Frequent periumbilical pain and flatulent dyspepsia. Thickened, tender caecum	1-3	E.H. cyst Giardia cyst	1	Giardia—a few	600 400	1 6	Vomiting on 1st, 2nd and 5th day. High coloured urine—2nd day	Cured
8.	35 F.	Lower fever, griping. Thickened, tender caecum. Liver—tender—3 fingers	5	E.H. cyst	2	Nil	300 400	5 5	Nausea during treatment. Sensation of heat—1st day. Giddiness—2nd to 5th day	Moderate relief of pain and slight diminution of size of liver
9.	50 F.	Lower abdominal pain. Liver—tender, 2 fingers	2	E.H. cyst	1	Nil	300	10	Nausea—3rd to 6th day	Cured. Liver size diminished
10.	33 F.	Pain in the right hypochondrium. Liver—tender, 3 fingers	1	E.H. cyst	1	Nil	do.		Nausea—3rd day. Vomiting 5th to 6th day	do.

11.	36 M.	Pain in the right hypochondriac region. Indigestion	2	E.H. cyst	1	Nil		do.		Vomiting 2nd to 4th day	Cured
12.	30 F.	Pain during defaecation. Tender caecum and colon. Anaemia	3	E.H. cyst Hookworm ova	1	H.W.		do.		Nausea—3rd day. Vomiting—4th to 5th day	do.
13.	20 M.	Low fever, tender caecum and colon. Liver—tender, 3 fingers	1	E.H. cyst	1	Nil		do.		Nil	do. Liver size diminished
14.	21 F.	Pain in left iliac region. Slightly tender colon	3	E.H. cyst E. nana cyst	2	E.H. cyst		do.		Vomiting—2nd to 6th day	No relief
15.	42 M.	Loose motions with pain. Tender caecum and colon	4	E.H. cyst	1	Nil		do.		Nausea—3rd to 5th day	Cured
16.	23 F.	Slight abdominal pain, giddiness, anaemia. Liver—tender, 2 fingers	4	E.H. cyst	1	Nil		do.		Vomiting—4th to 6th day	No relief of symptoms
17.	15 F.	Periumbilical pain. Tender caecum and colon	5	E.H. cyst	3	Nil	300		10	Headache and vomiting 1st to 4th day	Loose motions persisted but pain disappeared
18.	30 F.	Lower abdominal pain. Thickened, tender caecum	5	E.H. cyst	4	Nil		do.		Vomiting—2nd to 3rd day	No relief
19.	41 F.	Dull abdominal pain. Indigestion. Headache and giddiness. Tender caecum and colon. Alternate constipation and diarrhoea		E.H. cyst	1	Nil		do.		Nausea—2nd day. Vomiting—3rd day	Cured
20.	26 F.	Pain in left hypochondriac region. Acidity, heartburn and indigestion. Alternate constipation and diarrhoea		E.H. cyst I.B. cyst	1	Nil	400		10	Vomiting—3rd to 7th day	do.
21.	55 M.	Loose motions, griping. Loss of weight and weakness	6	Veg. E.H.	5	Veg. E.H.	200		1	Vomiting	No relief

TABLE 3—SHOWING DETAILS OF THE CASES STUDIED WITH THE PREPARATION 11925 C AND RESULTS

Case No.	Age (yrs.) Sex	Clinical features	STOOLS				Daily dosage in mg.	Days	Side-effects	Remarks
			Before treatment		After treatment					
			No.	Examination	No.	Examination				
1.	53 M.	Low fever. Pain in right hypochondriac region. Thickened, tender caecum and colon. Liver—tender, 2 fingers	2	E.H. cyst	1	Nil	300	7	Nil	Cured. Liver size diminished
2.	25 M.	Upper abdominal pain. Thickened, tender caecum and colon, Liver—tender, 3½ fingers	4	E.H. cyst Giardia cyst H.W. ova	2	E.H. cyst	300 400	4 3	High coloured urine and nausea from 4th day. Vomiting on 5th to 7th day	Moderate relief. Liver size—slightly diminished
3.	42 M.	Lower abdominal pain. Thickened, tender caecum and colon. Liver—tender, 1 finger. Anaemia.	2	E.H. cyst H. Worm	1	Nil H.W. ova	300	7	Nausea, vomiting from 3rd day. High coloured urine 4th day	Cured
4.	19 M.	do.	6	E.H. cyst	1	Nil	300	9	Nil	Cured
5.	56 F.	Abdominal pain and loose motions. Thicked tender caecum and colon. Liver—tender, 1½ finger	7	E.H. Veg. and cyst	1	E.H. cyst	300	10	Nausea 3rd to 5th day	Symptomatic relief
6.	35 M.	Flatulent dyspepsia & acidity. Thickened and tender caecum	6	E.H. cyst Giardia cyst	2	Nil	300	7	Nil	Cured
7.	25 M.	Chronic dysentery. Indigestion. Thickened, tender caecum and colon. Liver—tender, 3 fingers	5	E.H. cyst E. nana cyst	1	Nil	300	10	High coloured urine from 4th day. Burning sensation during micturition—5th day	Cured. Liver size diminished
8.	28 M.	Postprandial diarrhoea. Thickened, tender caecum and colon. Liver—tender, 1 finger. Bowels irregular		E.H. cyst	1	Nil	300	10	Yellowish urine from 5th day	Cured

9.	18 M.	Heaviness after food, acidity and heartburn, anaemia, weakness. Thickened tender caecum and colon	4	Giardia cyst	2	Giardia cyst	300	10	Nil	Partial relief
10.	44 M.	Pain in right hypochondriac region. Caecum and colon tender. Liver—tender, 1½ finger. Alternate diarrhoea and constipation		E.H. cyst	1	Nil	300	9	High coloured urine 4th day. Greenish urine from 5th day	Cured
11.	32 M.	Chronic dysentery, abdominal pain. Liver tender, 2 fingers. Caecum thickened and tender	6	E.H. cyst	2	Nil	300 400	7 1	Nil	Moderate relief
12.	35 F.	Abdominal pain. Flatulent dyspepsia. Thickened and tender caecum and colon	5	Nil	1	Nil	300	7	Nil	Cured
13.	22 M.	Weakness. Thickened tender caecum and colon. Liver—1 finger	6	E.H. cyst	2	Nil	300 400	8 4	Greenish urine from 3rd day onwards	Cured
14.	25 M.	Heartburn, water brash and epigastric pain. Thickened tender caecum. Liver—1 finger	1-2	E.H. cyst	1	E.H. cyst	300	10	Nil	Moderate relief
15.	30 F.	Heartburn. Indigestion. Thickened, tender caecum and colon. Liver—tender, 2 fingers. Alternate constipation & diarrhoea		E.H. cyst E. nana cyst	1	Nil	300 400	5 4	High coloured urine from 5th day	Cured
16.	55 M.	Loose motions with pain. Caecum, colon—tender. Liver—tender, 1 finger	12	E.H. cyst	1	Nil	300	10	Nil	do.
17.	36 M.	Weakness, anorexia. Lower abdominal pain. Thickened, tender caecum. Bodyaches.	1	E.H. cyst	1	Nil	300	9	Nil	Abdominal symptoms relieved

TABLE 3—*Contd.*

Case No.	Age (yrs.) Sex	Clinical features	STOOLS				Daily dosage in mg.	Days	Side effects	Remarks
			Before treatment		After treatment					
			No.	Examination	No.	Examination				
18.	33 M.	Abdominal pain with loose motions. Fever.	3	Strongyloid S. larva. Trichomonas Int.	1	Both present	300	8	Nil	No response
19.	20 F.	Upper abdominal pain. Acidity. Weakness and loss of weight	1	Veg. H. E. E. cyst	1	Nil	300 400	8 6	Nil	Cured
20.	40 M.	Loose motions with blood and mucus. Upper abdominal pain. Caecum & colon very tender. Scattered rales over both the lungs	6	Salmonella gr. of organisms (culture)	2	Coliform organisms	400	8	Nil	do.
21.	15 F.	Periumbilical pain. Angular stomatitis. Thickened tender caecum	10	E.H. cyst	1	Nil	300 400	5 5	Deep yellow urine from 2nd day	do.
22.	21 M.	Indigestion and heartburn. Loose motions with pain	5	Giardia cyst	2	Giardia cyst	400	8	Yellowish urine from 2nd day	Slight relief
23.	30 F.	Loose motions with abdominal pain. Thickened and tender caecum and colon	5	Veg. E.H. E.H. cyst	1	Nil	400	8	Nil	Cured
24.	25 F.	Loose motions. Abdominal pian. Low fever. Anaemia and weakness. Thickened tender caecum and colon	5	E.H. cyst	1	Nil	400	8	Nil	Cured

25.	50 M.	Loose motions with blood and mucus. Lower abdominal pain. Caecum and colon tender	6	E.H. cyst	2	Nil	300 400	5 4	Nil	Cured
26.	40 M.	Lower abdominal pain. Thickened, tender caecum. Liver—tender, 2 fingers	6	Veg. E.H. E.H. cyst	1	Nil	400	8	Nil	Cured. Liver size diminished
27.	30 M.	Chronic dysentery. Pain in right hypochondriac region. Thickened, tender colon. Liver—tender, 2½ fingers. Alternate constipation and diarrhoea		E.H. cyst Giardia	3	Giardia	500	10	Yellowish urine from 4th day. Headache on 4th and 5th day	Moderate relief
28.	23 F.	Indigestion, heartburn. Lower abdominal pain. Thickened, tender caecum	4	E.H. cyst	1	Nil	400	10	Nil	Cured
29.	49 F.	Chronic dysentery. Caecum—tender. Liver—tender, 2 fingers	4	E.H. cyst	1	Nil	300	10	Yellowish urine from 4th day	Cured Liver size diminished
30.	21 F.	Lower abdominal pain. Low fever. Caecum and colon—tender	5	Veg. E.H. E.H. cyst	1	Nil	400	10	Nil	Cured
31.	30 M.	Painful defaecation. Caecum, colon, liver—tender	4	E.H. cyst I.B. cyst Giardia cyst	1	Giardia cyst	400	10	Nil	Moderate relief
32.	65 M.	Chronic dysentery. Pain in right hypochondriac region. Caecum thick and tender. Liver—tender, 2 fingers. Bowels irregular		E.H. cyst I.B. cyst	1	Nil	500	10	Nil	Cured. Liver size diminished
33.	28 F.	Loose motions with pain. Thickened, tender caecum and colon	9	E.H. cyst	1	Nil	400	10	Nil	Cured

TABLE 3—*Contd.*

Case No.	Age (yrs.) Sex	Clinical features	STOOLS				Daily dosage in mg.	Days	Side effects	Remarks
			Before treatment		After treatment					
			No.	Examination	No.	Examination				
34.	16 M.	Anorexia, indigestion. Lower abdominal pain.	2	E.H. cyst	1	Nil	400	10	Nil	Cured
35.	23 F.	Loose motions with blood and mucus and abdominal pain. Caecum and colon—tender	5	E.H. cyst Giardia cyst	3	Giardia cyst	400	10	Nil	Moderate relief
36.	47 F.	Loose motions with mucus and pain. Indigestion. Bodyache. Thickened, tender caecum	4	E.H. cyst	1	Nil	500	10	Nil	Cured
37.	56 M.	Chronic dysentery. Lower abdominal pain. Heartburn and indigestion. Thickened, tender caecum	5	E.H. cyst I.B. cyst	1	Nil	500	10	Yellowish urine from 3rd day	Cured
38.	60 F.	do.	4	E.H. cyst	1	Nil	500	10	Yellowish urine from 3rd day	Cured
39.	46 F.	Chronic dysentery. Lower abdominal pain. Caecum—tender	5	Veg. E.H. E.H. cyst	2	Nil	500	10	Nil	Cured. She had a relapse after a month of the same treatment
40.	52 M.	Loose motions with pain.	8	E.H. cyst Hookworm ova. Trichomonas hominis	1	Nil	250	10	Nil	Cured

TABLE 4—SHOWING DETAILS OF THE CASES STUDIED WITH THE PREPARATIONS 11925 FOLLOWED BY 11925 C

Case No.	Age (yrs.) Sex	Clinical features	STOOLS				Daily dosage in mg. × days (a) 11925 (b) 11925 C	Side effects	Remarks
			Before treatment		After treatment				
			No.	Examination	No.	Examination			
1.	19 M.	Loose motions with abdominal pain. Thickened, tender caecum and colon	8	E.H. cyst	2	E.H. cyst	(a) 600×5 (b) 300×7	(a) Nausea from 3rd day (b) Nil	Symptomatic relief
2.	30 M.	do. Weakness, loss of appetite	6	E.H. cyst Giardia cyst Hookworm ova	2	Giardia cyst Hookworm ova	(a) 600×10 (b) 300×7	(a) Nausea from 1st day Vomiting on 3rd day High coloured urine from 3rd day (b) Nil	Cured
3.	40 F.	Loose motions with griping. Indigestion. Thickened, tender colon and caecum	4	E.H. cyst	1	Nil	(a) 300×3 (b) 300×6	(a) Nausea on 1st day Vomiting on 2nd and 3rd days (b) Nil	do.
4.	22 F.	do.	6	E.H. cyst Giardia cyst	2	Giardia cyst—a few	(a) 600×4 (b) 300×6 (b) 300×3	(a) Nausea 1st day Vomiting from 2nd to 4th day (b) Nil (b) Nil	do.
5.	45 M.	Loose motions with pain during defaecation. Thickened, tender caecum	12	E.H. Veg. cyst	2	Nil	(a) 600×3 (b) 300×1 (a) 600×4	(a) Nil (b) Greenish urine (a) High coloured urine	do.
6.	60 F.	Loose motions with pain. Acidity, heartburn, palpitation. Tender caecum, colon	6	E.H. cyst	2	Nil	(a) 600×3 (b) 300×5	(a) Vomiting from 1st day (b) Greenish urine from 4th day	Motions and pain diminished
7.	47 F.	Headache, palpitation. Loose motions with pain. Colon and caecum tender. Liver—tender, 1 finger	4	Iod. but. cyst	2	Nil	(a) 600×3 (b) 300×5	(a) Nausea 1st day Vomiting 2nd and 3rd days (b) Greenish urine on 6th and 7th day	Cured
8.	32 F.	Alternate constipation and diarrhoea. Tenesmus. Tenderness in right iliac region	2	Nil	1	Nil	(a) 600×3 (b) 300×1 200×10	(a) Vomiting 1st and 2nd days (b) Nil	Symptomatic relief
9.	20 M.	Loose motions with pain. Flatulent dyspepsia. Caecum and pelvic colon—thickened and tender	2	E.H. cyst Giardia cyst	1	E.H. cyst—a few Giardia cyst	(a) 600×3 Interval 3 days (b) 300×6	(a) Headache and vomiting from 1st to 3rd day (b) Greenish urine from 9th day	Moderate relief

acute cases vegetative forms were also present. Five cases were treated with a dosage of 300 mg. daily for 7 to 10 days, one with 400 mg. daily for 8 days, two with 500 mg. daily for 10 days. The remaining three were treated with 300 mg. daily followed by 400 mg. daily for 7 to 9 days. Clinical cure was obtained in seven, symptomatic relief in one, moderate relief in three. In all the cases except one the size and tenderness of the liver diminished within a week to 10 days. Motions and abdominal pain usually diminished from the 4th day onwards.

COMBINED TREATMENT WITH 11'925 AND 11'925 C (Table 4):

In this group of cases, when treatment was started with 11'925, intractable side effects prevented its further use. Hence the treatment was further followed up with 11'925 C. This group of nine cases comprised of four acute and five chronic cases (one with hepatitis) of amoebiasis. Of these, four had also giardia or iodamoeba or hookworm infections. Vegetative form of *E. histolytica* was present in the stool of one case and cystic forms in eight cases. Stool was negative in one but here the clinical history suggested chronic amoebiasis. After treatment vegetative forms disappeared but cysts persisted in two of the eleven cases and clinical cure was obtained in five, symptomatic relief in 2 and moderate relief in 2 remaining cases. Preparation 11'925 was administered in a dosage of 600 mg. daily and 11'925 C in a dosage of 300 mg. daily, the total duration of the treatment being 8 to 11 days.

Side effects—When the treatment was started with preparation 11'925, eight cases developed nausea and vomiting which necessitated its withdrawal within 3 to 4 days. Vomiting probably prevented optimum absorption of 11'925 and hence no clinical improvement was achieved with its use. These side effects disappeared at once with a change over to 11'925 C and clinical improvement was also noticeable. However, with 11'925 C, high coloured urine appeared in 4 cases but no serious toxic effects were found.

DISCUSSION

Twelve cases of amoebiasis have been treated with the new synthetic amoebicidal compound 11'925 and favourable results reported (Sen *et al*, 1955). In our series, 70 cases were treated with the new preparations 11'925 and 11'925 C between 1956 and early part of 1957. Sixtyfive cases had either cysts or vegetative forms of *E. histolytica* in their stools. Eighteen had hepatic manifestations of amoebiasis. Caecum and colon were palpable and tender in a fairly large number of cases.

Any amoebicidal drug which would act locally against intestinal infections, and when absorbed acts in the intestinal wall and also concentrates and acts in the liver would be beneficial for the cases described above. Besides, bacterial flora in the intestine often adversely affects the satisfactory progress of the amoebiasis cases. Hence, any amoebicidal drug having antibacterial activity also will be an ideal drug in the treatment of amoebiasis. The above conditions are satisfactorily fulfilled by these new synthetic compounds as appears from our trial.

In twentyone cases treated with preparation 11'925 alone, clinical cure was achieved in twelve (57 per cent), symptomatic relief in three (14 per cent), moderate relief in one and slight relief in one. Four cases (19 per cent) however, did not respond to this drug possibly due to the high incidence of side effects, e.g., nausea, vomiting being largely responsible for its ineffectual absorption. The dosage used for acute cases was 600 mg. and for chronic cases 300 to 500 mg. daily for a week to 10 days (approximately).

In forty cases treated with 11'925 C alone, clinical cure was achieved in thirty (75 per cent), symptomatic relief in two (5 per cent), moderate relief in six (15 per cent), slight relief in one (2·5 per cent) and no relief in one (2·5 per cent). The dosage of preparation 11'925 C used in the trial was 300 to 500 mg. daily for a week to 10 days (approximately). With combined treatment in nine cases, clinical cure was achieved in five, symptomatic relief in two and moderate relief in two cases, failure nil. Majority of this group could not tolerate the preparation 11'925 but responded well to 11'925 C.

Predominant side effects of the preparation 11'925 are a drawback for the effective oral administration of this drug which can partly be overcome by the use of a gastric sedative. No serious side effects were noticed with the preparation 11'925 C where high coloured urine may often be found.

11'925 C has a definite antibacterial activity as is evident from the result of the case with salmonella infection and it requires further evaluation. Both the preparations have a definite action on the liver which responds favourably within a week by diminution in its size and tenderness.

SUMMARY

Seventy cases of amoebiasis (65 with positive stools, 18 with hepatitis) were treated with the new synthetic compounds 11'925 and 11'925 C.

Nearly 75 per cent of the cases responded favourably to the preparation 11'925 within a week to 10 days. Approximately 25 per cent did not respond, mainly due to its side effects, nausea, vomiting which appeared in 1 to 4 days.

With the preparation 11'925 C immediate relief was obtained in 95 per cent of the cases within a week to 10 days. Hepatic manifestations also improved with both the drugs.

Combined treatment with both the preparations further stresses the non-toxic nature and indicates the efficacy of the preparation 11'925 C, in particular.

ACKNOWLEDGMENTS

Our thanks are due to Lt.-Col. S. Sinha, the Superintendent of R. G. Kar Medical College Hospitals, Calcutta, for the permission to include hospital materials and to Messrs. Ciba Pharma Private Ltd. for the supply of preparations 11925 and 11925 C to conduct the necessary trial.

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CLINICAL TRIAL WITH TWO NEW SYNTHETIC COMPOUNDS IN AMOEBIASIS

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Preparation 11'925 is a semicarbazone of 5,6-quinone-4,7-phenanthroline and is a yellow substance of bitter taste, slightly soluble in water. When taken by mouth the drug is readily absorbed and is excreted in active form in bile and urine.

Preparation 11'925 C is the 5,6-quinone-4,7-phenanthroline and is a yellow substance slightly soluble in water.

Both drugs have strong amoebicidal action *in vitro*. The lowest amoebicidal concentration *in vitro* is reported to be 1 : 8000 for preparation 11'925 and 1 : 16000 for 11'925 C. They have also bacteriostatic action against some Gram-negative and Gram-positive organisms.

The amoebicidal action of the compounds *in vivo* was studied in experimental amoebiasis in rats and was found satisfactory. In animal experiments the toxicity of the compounds was also found to be low. In very large doses oral administration in dogs produced vomiting and microscopic haematuria. Prolonged administration in rats, rabbits and mice, however, produced no demonstrable pathological changes.

From the above experimental studies the manufacturers claimed that these two compounds would be very useful against human amoebiasis and possibly, also in other protozoal infections. For effective control of amoebic infection it is desirable that the parasites have to be attacked not only in the lumen of the intestines, but in the intestinal wall as well, or in any internal organ, particularly the liver. As secondary bacterial infection favourably helps the amoebic infection, it is now recognised that better results are obtained when an antibacterial drug is combined with an amoebicidal drug. These new compounds offered the advantages of effecting amoebicidal property and bacteriostatic action and at the same time were said to be effective through absorption in blood. As the toxicity was claimed to be low, a clinical trial was thought justifiable.

A limited clinical trial was given with both the compounds (Sen *et al*, 1955 and Sen and Sanyal, 1956) and the compounds were reported to be well tolerated and effective against amoebiasis.

MATERIAL

Patients with symptoms of dyspepsia, diarrhoea and dysentery, who showed evidence of protozoal infection of the bowels on examination of their stools were selected for trial. A few cases also showed evidence of hookworm infection with or without accompanying protozoal infection. These were also included in the trial to see if the compounds had any effect on hookworm infection.

All cases were admitted in the hospital and kept at bed-rest during the treatment. Stools were examined several times before the administration of the compounds and periodically during the course of treatment and afterwards. In a few cases sigmoidoscopic examination was done before and after treatment. No other specific antibacterial or amoebicidal drugs were used during the trial.

A total of 47 cases were treated by these two compounds. 34 cases (Group A) with the compound 11'925 and 13 cases (Group B) with 11'925C. The age and sex distribution of the cases are shown in Table 1.

TABLE 1—SHOWING SEX AND AGE DISTRIBUTION

Group	Sex		Age in years							Total
	Male	Female	0-10	11-20	21-30	31-40	41-50	51-60	61-70	
A—(11'925)	26	8	—	6	15	6	4	2	1	34
B—(11'925 C)	13	—	—	—	7	5	1	—	—	13
Total	39	8	—	6	22	11	5	2	1	47

The youngest patient was 12 years old and the oldest 65.

The results of the examination of the stool are shown in Table 2.

TABLE 2—SHOWING RESULTS OF STOOL EXAMINATION IN GROUPS A AND B

Group A (11'925)	Group B (11'925C)
Entamoeba histolytica 25	16
A. Vegetative form ... 7	A. 7 (5 had cystic form of *E. histolytica*, 1 with giardia cysts as well)
B. Cystic form ... 18 (4 cases had *E. coli* cysts and 4 had giardia cysts as well with hookworm in 1 and trichomonas in another in addition).	B. 9 (5 cases had *E. histolytica* vegetative as well included under A) 1 case had *E. coli* cyst.
Giardia intestinalis ... 10 (4 cases had E. H. cysts and one case had *E. coli* cysts also. 2 cases had hookworm).	2 (one case had E.H. infection also.)
E. coli cysts ... 6 (4 cases associated with E. H. one with giardia and one with iodamoeba infection).	1 (associated with E.H. infection.)
Hookworm ova ... 5 (2 cases with giardia and 1 case with E.H. and *E. coli* infection).	1

TREATMENT

The compounds were given in the form of tablets (11'925, 100 mg. per tablet and 11'925C, 50 mg. per tablet). In most cases the treatment was begun with 2 tablets 3 times a day after meals. The dosage had to be reduced in some cases due to intolerance, to 1 tablet 3 times a day. With the preparation 11'925C the dosage was increased to 4 tablets 3 times a day in a few cases if tolerance was good. Treatment was continued for 10 days.

The compounds were well tolerated in most cases. With 11'925, out of a total of 34 cases treated, treatment had to be abandoned in 2 cases because of serious intolerance. In 4 other cases the dosage had to be reduced to half. With the drug 11'925C all the 13 cases completed treatment without any serious intolerance, but the dose had to be reduced in one case.

Most of the symptoms of intolerance were those of gastric irritation, and were of mild nature. Anorexia, nausea and vomiting and occasional dryness of the mouth were the usual symptoms. 11 cases of the 34 treated with 11'925 showed these symptoms and in 2 cases only were the symptoms severe. In two cases besides the gastric symptoms dizziness, burning in the eyes and palpitation were seen. With 11'925C mild gastric symptoms were only seen in 3 out of 13 cases.

RESULTS

The results have been analysed to show the effect of the compounds on the individual parasites, although several patients showed multiple infections. Therapeutic effect of the compounds on the clinical symptoms has also been analysed. As many of the cases had various dyspeptic symptoms, all of which could not be ascribed to the parasitic infection, only diarrhoea and symptoms referable to the large bowel, as well as those of hepatitis in amoebic cases have been taken into account in analysing the results.

CONTROL OF INFECTION:

E. histolytica—Of the seven cases who showed trophic forms of *E. histolytica* in the stool and were treated with 11'925, the parasites disappeared in all the cases within 6 to 10 days.

With the drug 11′925C seven other cases, showing trophic *E. histolytica* were treated. The parasites disappeared in stool in five cases, in 3 to 10 days. In two cases, however, the parasites persisted, even after 10 days' treatment.

Eighteen and nine cases, respectively were treated with 11′925 and 11′925C, who showed cysts of *E. histolytica* in their stool. With 11′925, stool became cyst-free in sixteen of the eighteen cases; one case required a second course with increase of dose. In the other two cases treatment had to be stopped because of severe intolerance. With 11′925C, however, cysts were still present in the stool in four cases out of the nine treated for 10 days.

E. coli—*E. coli* is considered to be a non-pathogenic parasite. As such no case showing *E. coli* alone in the stool was treated by the compounds. Seven cases, however, showed *E. coli* cysts in the stool along with either *E. histolytica* or giardia infection. Six of these cases were treated with 11′925 and one case was treated with 11′925C. During this treatment the cysts of *E. coli* disappeared from the stool in all these seven cases, showing that both the compounds were effective against the *E. coli* cysts.

Giardia intestinalis—Giardia, mostly in cystic form was found in the stool of twelve patients, ten of these were treated with 11′925, and the parasites disappeared from stool in five cases. They persisted in three others after 10 days' treatment and the other two patients did not complete their treatment. With 11′925C one case became free from the parasites, but the other did not respond.

Hookworm—Hookworm ova were found in the stool of six patients. Three of these were treated with the compounds for their associated amoebic and giardia infections. One case had diarrhoea but no protozoal parasites were found in the stool. The other two cases had only hookworm ova and had no bowel symptoms. Five cases were treated with 11′925, the other case had 11′925C. In none of the cases any effect on the hookworm infection was seen. The ova persisted in all the cases after 10 days' treatment. In the case with diarrhoea without any amoebic or giardia infection, the compound 11′925 produced symptomatic improvement by stopping the diarrhoea.

RELIEF OF SYMPTOMS:

Two cases were admitted with acute dysenteric symptoms and the stools showed typical blood and mucus. Both the cases had trophic form of *E. histolytica* in the stool. One case was treated with 11′925 and the symptoms were completely controlled in 5 days. The other was treated with 11′925C and the symptoms were completely controlled by the 3rd day.

Fifteen cases in Group A (11′925) and four cases in Group B (11′925C) had chronic or recurrent diarrhoea. In Group A two cases had giardia infection alone. The rest had all amoebic infection, with giardia infection in two cases. In Group B all cases had amoebic infection. The diarrhoeic symptoms were controlled in 3 to 6 days in all these cases, in both groups. One case of diarrhoea, associated with hookworm infection, who showed no protozoa in stool was treated symptomatically with 11′925 with control of diarrhoea.

Enlarged and tender liver suggestive of amoebic hepatitis was present in four cases. All these cases had *E. histolytica* in the stool either as cysts or in trophic form. Three of these cases were treated with 11′925 with improvement in liver condition in all. In one case, treated with 11′925C, the liver was still enlarged and tender after 10 days' treatment. In this case the E.H. cysts were also present in stool after completion of treatment.

DISCUSSION

It will be seen from the results that both the compounds were effective against *E. histolytica* infection specially on the trophic forms. With 11′925 all the seven cases treated responded, whereas with 11′925C, two out of seven cases failed to respond, the trophic forms of *E. histolytica* persisting in stool after 10 days' treatment. The compound 11′925 was also highly effective on cysts of the *E. histolytica*. All the sixteen patients with cysts in the stool who could tolerate the drug and complete the treatment responded. In one case, however, cysts reappeared in stool within 7 days and a second course was given with good result. With 11′925C however, the result was not so satisfactory. Four out of nine cases failed to respond.

Although *in vitro* studies showed a stronger amoebicidal property of the compound 11′925C than 11′925, clinically the latter appeared to be more effective. In view of the stronger amoebicidal action of 11′925C the dosage used with this compound was half that of 11′925. In some cases higher dosage, that is a dose equal to that of 11′925 was also used. But the effect did not seem to be better. On the other hand, it was seen that with the compound 11′925, a smaller dose (300 mg. a day) which had to be given in some cases due to symptoms of intolerance was effective.

As far as symptomatic improvement is concerned both compounds appear to be equally effective in prompt control of diarrhoea. Even a case of non-specific diarrhoea was controlled. On hepatitis the compound 11'925 was effective in all the three cases in which it was used. 11'925C, however, failed to improve the only case of hepatitis in which it was tried. In this case the drug also failed to control the intestinal infection.

If these results are compared with those of Sen *et al* (1955) and Sen and Sanyal (1956) it will be seen that although these authors used much higher dosage, the results are quite comparable.

On *E. coli* which was found as incidental infection in some cases, both compounds appeared to be effective.

On *Giardia intestinalis*, which is a frequent cause of diarrhoea, the compounds appeared to be less effective. With 11'925, five out of eight cases who could tolerate an effective dose responded. With 11'925C two cases were treated of which one responded, the other did not.

The compounds had no effect on hookworm infection.

Although no serious toxic effects were seen with either of the compounds, gastric intolerance was fairly frequent. The compound 11'925C appeared to be better tolerated than 11'925. With the latter as many as eleven out of thirtyfour cases showed symptoms of intolerance, and in two of these cases the treatment had to be abandoned. It would be worthwhile to see if tolerance to the drugs can be improved by giving them in enteric coated capsules.

Conclusion

The compound 11'925 produced immediate good result with disappearance of both trophic and cystic forms of *E. histolytica* in 100 per cent of cases who could tolerate an effective dose. With the compound 11'925C the same effect was seen in about 70 per cent of cases with trophic form and about 56 per cent of cases with cystic form of *E. histolytica* in stool. On amoebic hepatitis the compound 11'925 was effective in all three cases but the compound 11'925C had no effect on the only case in which it was tried.

On giardiasis the compound 11'925 was effective in about 62 per cent of cases. The compound 11'925C was tried in only two cases of giardiasis and it was effective in one case.

No serious toxic action was seen with either compound except gastric intolerance in about 32 per cent of cases with 11'925 and in about 26 per cent with 11'925C.

Acknowledgments

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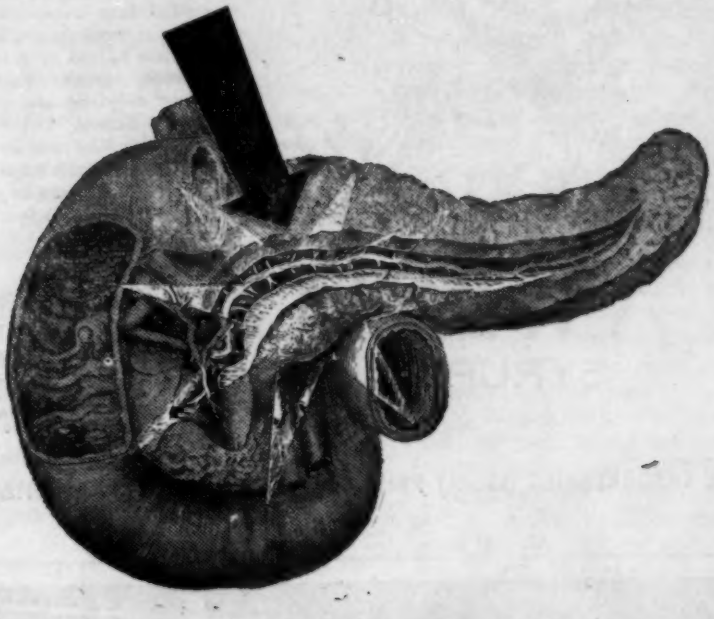

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management of fracture should be corrected. Principles of local treatment consist of:

(1) Reduction of fracture.
(2) Immobilisation.
(3) Rehabilitation of the patient.

Reduction

PRINCIPLES FOR PROPER REDUCTION:

Good muscular relaxation by general anaesthesia—This is ideal but in recent fracture within 2-3 days, local infiltration anaesthesia by 2 per cent novocaine (sterile) 2-5 c.c. into fracture haematoma may be used with proper aseptic care.

Determination of position of fragments—Estimation of the position of fragments by palpation and by skiagraphy is essential before undertaking reduction. Generally the displacement in all fractures is described in regard to lower or distal fragment and in manipulation during the reduction, the idea is to bring the lower or distal fragment back in alignment with the upper or proximal fragment. The operator must have a good mental picture of the displacement of fractured ends for a successful reduction.

Apposition of fragments—An anatomical end to end apposition of fragments is desired in all cases after reduction but in some late cases or in certain sites it is not possible by closed technique of manipulation. If the axis of bony fragment is in line with or parallel to upper fragment, then there is chance of good functional result especially in children.

Proper traction and countertraction—Sufficient traction and countertraction in the longitudinal axis of bone is necessary for a successful reduction. Common causes of failure of reduction especially in the fracture of both radius and ulna or tibia and fibula or even in supracondylar fracture of humerus is inefficient traction and countertraction.

Under proper anaesthesia, traction and countertraction should be applied for at least 5-7 minutes before the actual manipulation is undertaken. The overriding of fragments can often be felt to be corrected during traction and then manipulation should be done to correct other displacements and to hitch the fracture ends into a fairly stable position.

Closed reduction—Closed reduction by manipulation is ideal but requires specialised technique and skill. Failing this method open reduction by operation should be done. Open reduction is often necessary in fracture of both radius and ulna, in fractures of the neck of the femur, patella and olecranon process of the ulna where there are chances of muscle or soft tissue interposition between the fragments.

Operative reduction and subsequent internal metallic fixation has a tendency for fine carpentry to get an ideal anatomical reduction but carries with it the chances of infection, delayed union and nonunion. Even when union occurs, there are chances of loss of physiological functions of the limb, in spite of good anatomical reduction and union.

Immobilisation

The principles of immobilisation are:

1. It should be efficient and will not allow any movement between the fractured fragments after manipulation reduction.
2. Only the affected part should be immobilised, leaving other parts of the limb for movements and active use.
3. Whatever the method used, one joint above and one joint below the fracture site should be immobilised.
4. It should be for minimum period—this period or time-table of union varies depending upon the site and the type of fractures, age and constitution of the patient.

METHODS OF EXTERNAL FIXATION:

Splints of various types in different types of fractures were used before but now-a-days are replaced by plaster of Paris casts and casing. Only the Thomas splint for inferior extremity has come to stay for its various uses.

Plaster of Paris cast and casing—This is better than splints and ensures good immobilisation and is comfortable to the patient, it is light, requires little adjustment subsequently, fits the body and can be quickly applied. Some surgeons use plaster directly on skin, but others prefer a layer of cotton wool over the area affected. Usually unpadded plaster is preferred but for outdoor cases in a hot and humid climate like ours, lightly padded plaster is ideal.

Both these methods ensure external immobilisation. Some fractures even get displaced within this plaster casing or are difficult to be immobilised in this way. They are better immobilised by the following internal methods which require an open operation and exposure of the fracture site.

METHODS OF INTERNAL FIXATION:

Bone plating—Stainless steel or vitallium (alloy) plates with 3 screws above and 3 screws

below the fracture site should be used for the long bones. Accessory splintage by external methods as plaster of Paris casing is desirable.

Bone grafts—Grafts—autogenous, homogenous and even heterogeneous—serve the dual purpose of internal fixation and osteogenesis. Useful in delayed union and non-union of the fracture, autogenous grafts are incorporated quickly than other types. Bone banks have been developed in well equipped hospitals and serve as a ready source of bones for grafting.

Screw fixation—Long spinal fracture can be immobilised by 2-3 screws and it is useful in fractures near about a joint. It is to be supported by external fixation with plaster of Paris casing.

Intramedullary nailing—A long nail whose diameter is slightly less than the diameter of the medullary cavity of the bone fractured is used to fix both the fragments together. The length of the nail should be a few centimeters less than the length of the bone. This is a very useful method, if followed correctly, as it entails perfect anatomical apposition of the fragments and dispenses with external methods of immobilisation. Early rehabilitation of the patient is possible as he requires a shorter hospital stay. Asepsis during operation should be of the highest order.

This method was developed by Kunstschner during the last war in Germany with the result that injured soldiers with fractured femur could even go to the front line in four weeks.

Smith-Petersen pin provides a good method of internal fixation of the fractured neck of the femur after manipulative reduction. External support by a plaster boot or flapper to prevent external rotation of leg is essential for 3 months. The advantage of the method is that the patient can mobilise the leg and knee and can sit up, thus preventing occurrence of bed sores and hypostatic pneumonia—two major complications of this fracture. Bony union occurs in about 70-75 per cent.

PERIOD OF IMMOBILISATION :

The period of immobilisation will vary according to the nature and site of the fracture and the age and constitution of the patient. Fractures of the small bones and the small long bones as carpals (except scaphoid), metacarpals, phalanges and ribs which are naturally splinted and where no rotational or gravitational forces act, may be immobilised for 2-3 weeks when a sort of sticky union occurs.

Another group of fractures in the long bones of the superior extremity, i.e., clavicle, humerus, radius and ulna should be splinted for 4-6 weeks when clinical union occurs. But when rotational force or gravity plays on the fragments as in fracture of both bones of the forearm or fracture of bones of the inferior extremity (e.g., femur, tibia, calcaneus) or spine, they should be immobilised for 12 weeks or more when the union would be firm and remodelled. This is known as radiological union.

These are the average periods of time taken for union ; in children the union is rapid by a few weeks, while in old persons, this is delayed by a few weeks.

Check—X-ray to verify the reduction of the fragments should be done immediately after reduction during the period of immobilisation and also after removal of the plaster or splint as the case may be.

REHABILITATION

The maintenance and restoration of function of the limb during the immobilisation period are absolutely necessary, the idea being to prevent stiffness of the joints and wasting of the muscles. To achieve this, the following are advocated :

Immobilisation of only the affected part so that other parts of the limb and joints may be actively moved. Active movements should be encouraged. immediately after the plaster sets ; breathing exercise should be encouraged if the patient is bed-ridden and infirm as in fracture of the neck of the femur in old persons.

Physiotherapy is very helpful and the role of the physiotherapist is to encourage active movements and if the patient is not co-operative, passive movements of the limbs are desirable. Various methods of physiotherapy as are helpful specially after removal of the plaster should be under the direction of an orthopaedic surgeon.

Psychological aspect of the patient should also be attended to and unnecessary fear and anxiety as regards the limb should be allayed. Congenial occupation of the mind by various hobbies, music etc., i.e., occupational therapy is very helpful. Games, both indoor and out-door, depending on the type of the patient are allowed.

Rehabilitation method as outlined above should be continued after removal of plaster till the patient is able to join his original work. After removal of plaster various types of massage as effleurage, tapotement, etc., and contrast bath are very useful to loosen stiff joints and improve the tone of muscles of the immobilised limb. Light support by elastic crepe bandage for a few days prevent both plaster oedema and pain.

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RADIATION HAZARDS

As long as life existed on earth it was exposed to radiation, adapted itself to it and even used this energy to bring about alterations of its hereditary constitution. This natural or background radiation was the only form of radiation which confronted living beings on our planet, remaining constant for about one thousand million years. Revolutionary changes started in 1895 when Roentgen discovered his rays, culminating in Fermi's setting in motion the first fission—chain reaction (1942). Thus was revealed atomic energy, a million times more powerful than the most effective chemical process, showing its destructive potentialities to an alarmingly quickly growing extent from the first roentgen cancer in 1902 to the explosions of the first atomic bombs in 1945.

To assess the significance of man-made radiation, it has to be compared with natural radiation because permissible doses, dangers of fallout, etc., are estimated against this fairly constant figure. Sources of natural radiation are cosmic rays and the radioactive elements present in the atmosphere, in the earth's crust and in our own body. As cosmic rays are coming from interstellar space and are partly absorbed by the earth's atmosphere, their ionizing effect at 40,000 feet altitude is 100 times more powerful than at sea level. Atmospheric radioactivity is due to radon, a gas derived from the decay of uranium which diffuses out of the earth and from coal. Terrestrial radiation is emitted by the disintegration products of thorium and uranium which are universally distributed in tiny quantities all over the earth ; inside granite built structures background radiation reaches a multiple of its average value ; it is much lower in brick houses than in the open. Finally, our body normally contains small amounts of radioactive potassium-40 (1/8000 of the total body potassium) and 1 : 1,000,000 of the total body carbon is formed by its radioactive isotope C-14.

The gonads receive from all these natural sources 0·1 r per year or 3 r per generative period of 30 years. The significance of these figures becomes clearer when we compare them with maximum doses estimated as safe for those occupationally exposed to radiation effects. The permissible amount has been reduced from 1·4 r per week in 1931 to 0·3 in 1950 and, finally, for the U.S.A., to 0·096 r in 1957. This downward trend in the permissible radiation dose is due to recent knowledge about genetic effects which probably might be achieved even by smallest doses, and statistical experience about its life shortening influence ; the latter is based on the differences in the average age at death, which in the entire U.S. population is 65·6 years, among physicians without contact with radiation 65·7, and among radiologists 60·5. This weekly permissible dose is valid only for the comparatively few medical, industrial and research workers who cannot avoid exposure, whereas the vast majority of people, on whose healthy gonads the further genetic fate of mankind depends, should not receive more than twice the natural radiation during their generative period.

Measurements carried out among occupationally exposed people in England have shown that their gonads receive about 2·5 r per year ; however, due to the small number of such people this dose calculated per head of the total population amounts to only 1·6 per cent of the natural radiation. How much proper care can achieve even under exceptionally risky conditions is shown by the fact that each of the 7,000 employees of the British Atomic Energy Authority receives only 0·4 r per year.

Among the sources of man-made radiation to which mankind is exposed today, medical uses of x-rays stand first. In 1955 diagnostic and therapeutic applications amounted to about 18 million in the U.K. alone. Calculating the average gonad dose derived from them, the British M.R.C. estimated that every member of the population of Great Britain gets annually 25 per cent of the natural radiation from radiological diagnostic and treatment, whereas in the U.S.A. the corresponding load amounted to 100 per cent of the background. From wearing a watch with a luminous dial the gonads receive about 0·01 r per year. The use of x-rays for shoe fitting contributes only 0·1 per cent of the natural radiation.

Of special interest are the most recent sources of radioactivity to which everybody and everything on earth are continually exposed, the atomic and thermonuclear bombs. Of the fission products of the former we are medically interested only in

strontium-90 and caesium-137. The thousand times more powerful hydrogen bomb is a fission-fusion-fission bomb. A thermonuclear explosion produces very little radioactivity by itself, tritium emitting only beta rays of very little activity. The many hundred times greater amount of radioactive fallout which is found after such explosions, compared with the previous atomic bombs, is due to the fission products of the uranium core and mantle. This explains the hope that it will be possible to build a "clean bomb", that is one free from fallout, if one could produce temperatures high enough to achieve fusion of lithium and deuterium by conventional explosives only. Moreover, the debris of a hydrogen bomb is carried about 100,000 feet high, those of a fission bomb not more than 40,000 feet, so that of the former only about 10 per cent come down every year, taking a decade until the whole fallout of one explosion has reached the earth's surface. The fallout which is "banding together" in certain parts of the atmosphere[1] comes down to earth with rain and snow. The total radioactivity which all the atomic bombs, exploded up to the end of 1955, have contributed and will contribute over the next 50 years will amount to 0·005 r for a man continuously out of doors in England. In England. In addition, the accumulated dose from H-bomb explosions was estimated at 0·002 to 0·003 r per head with another 0·027 still to come for an equally unprotected individual, not making any provisions for radiation lost by drainage and weathering. "All these doses together add up to about 0·035 r from weapons already exploded"[2]. Taking into account radiation reductions by weathering and protection affected by houses, the same authoritative report estimates that "the average inhabitant of the U.K. may receive in the next 50 years between 0·001 and 0·002 r from fallout, or 0·02 to 0·04 per cent of the natural radiation that they will receive during the same period and if the firing of both types of bomb were to continue indefinitely as over the past few years, there would be a build-up gradually reaching a plateau in about a hundred years time which . . . . would give the average individual a dose over a period of 30 years of 0·026 r or about 0·9 per cent of what he would receive in the same period from natural sources".

Deceptively harmless look also the figures for strontium-90 ; this is the most important component of fallout because, apart from its relative abundance (5 per cent) among fission products, it is easily absorbed, following calcium through the food chain, mainly in vegetables and dairy products, and is deposited in the bone where it remains for a long time ; due to its half-life of 28 years it is capable of producing bone tumours or aplastic anaemia if stored in sufficient concentration. It is noteworthy that bones of children contain 5 to 10 times higher concentrations than those of adults. Caesium-137 accumulates mostly in muscle and, in spite of its gamma rays, is unlikely to contribute much to long term hazards[3].

The most interesting question is whether the contamination of the global atmosphere and the terrestrial surface could have undesirable effects on this and future generations at the concentrations of fusion products measured now and predicted for about a generation ahead, and what after-effects may be expected from the application of x-rays which in the medical sector is increasing so rapidly that in the British N. H. S. hospitals the number of diagnostic x-ray examinations increased from 7 million in 1951 to 12 million in 1955. Radiation effects can be more easily followed up and evaluated statistically when cases submitted to radio-therapy are considered. Of 1,400 American children x-ray treated for enlarged thymus gland, seventeen developed malignancies, one to twelve years later, against five among not irradiated siblings used as control. Among the malignant changes, seven were leukaemias and six cancer of the thyroid.

On a much larger scale was the Medical Research Council investigation carried out among 13,352 patients who had received x-ray treatment for ankylosing spondylitis from 1935 to 1954[4]. Of 46 patients of this series who had died by 31-12-1955, leukaemia was the cause of death in 28, against 2·9 as expected, aplastic anaemia in 12, against 0·3 as expected ; in addition, leukaemia was diagnosed in three still living members of this series. That these highly significant differ-

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[1] U. S. Atomic Energy Commission—*New York Times*, Aug. 26, 1957.

[2] Medical Research Council Report—The Hazards to Man of Nuclear and Allied Radiations, H. M. Stat. Office, London, 1957.

[3] Anderson, E. C., *et al*—*Science*, **125** : 1273, 1957.

[4] Court-Brown, W. M. and Doll, R.—Leukaemia and Aplastic Anaemia in Patients Irradiated for Ankylosing Spondylitis. Medical Research Council Sp. Report, Series, No. 295, H. M. Stat. Office, London, 1957.

ences could be due to a natural association between ankylosing spondylitis and leukaemia or aplastic anaemia was proved unlikely. Regarding the crucial question of dose-response relationship "the authors suggest the adoption of the working hypothesis that, for low doses, the incidence of leukaemia bears a simple proportional relationship to the dose of radiation, and that *there is no threshold dose* for the induction of the disease." A linear dose-response relationship has been also found in Hiroshima ; the frequency of leukaemia was closely related to the distance from the bomb centre at the time of the explosion : from 2 at more than 2,000 metres to 128 at a distance of under 1,000 metres.

These facts applied to the effect of Sr-90 led to the estimate that the explosion of every H-bomb which equals one million tons of T.N.T. may eventually cause 1,000 cases of bone cancer among the world population within several decades due to the radioactive strontium in the fallout. By 1970, the same statement continues, the radiation dose to bone from all tests carried out up to autumn 1956 will range from 9 to 45 per cent of the total natural radiation, with special risk for children who store so much more strontium in their bones[5]. At present the maximum skeletal concentration is 4-10 units, estimated to reach 10-25 U if test explosions should continue at the present rate for several years more[6]. Ten units, which have been reached already, are expected to produce bone sarcoma in one out of 20,000 people[7].

Genetic effects are achieved by mutations, most of which are undesirable. Of the radiation which can achieve mutations, four-fifths come from natural sources and one-fifth is man-made, almost all derived from x-rays. Fallout from test explosions, so far, has contributed very little to this burden ; even the most pessimistic estimate does not go beyond 1 to 2 per cent of the natural radiation[5]. The amount of radiation required to double the natural frequency of mutations is not known. While the Indian Committee[8] says that "the doubling dose may be as low as 3 r, (a figure considered as correct by Glass[9]), though a value about 10 times larger appears more likely", the British experts[3] think, although emphasising the present uncertainty of any guess, that according to the best estimate the value lies between 30 and 80 r absorbed by the gonads in 30 years. There is nobody who claims that anything approaching even a small fraction of this dose could be generated by fallout in peace time. The argument is that if there is no minimum dose of genetic radiation effects but even the smallest amount proportionally contributes to the total, then 1/1,000 r absorbed by each of 10 million people will have the same effect as 10 r absorbed by each 1,000 people. The effect of the radiation increase caused by test explosions on the number of additional mutations is estimated at 0·1 to 1 per cent meaning that the present rate of fallout produces 100 to several thousand new mutations a year[10]. According to another estimate, fallout has produced 1/500 of the mutation doubling dose by now and 10 per cent of the new mutations will turn up in the present generation so that the test explosions would be responsible for 6,000 new defective children already[11].

The Indian scientists[8] calculate that every major explosion will ultimately kill 1,000 people by genetic effects. But even the most conservative estimate of an increase of the mutation rate by 0·1 per cent means, as everyone of 2,700 million is being affected, that the bomb explosions have caused so far 2,700 genetic casualties. Even if we were ignorant of the fact that certain plants and animals are capable of concentrating radioactivity up to 150,000 times[5], one would be entitled to warn against the continuation of bomb tests for three reasons :

(1) "It is very unlikely that there is any threshold below which no damage is done"[6].

(2) "All man-made radiation must be regarded as harmful from the genetic point of view"[12].

(3) Bomb tests are the only source of radiation that could be eliminated by one single agreement among the "atomic powers".

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[3] Pirie, A.—Fall Out. 1957. Published by MacGibbon & Kee, London, pp. 107, 126 & 145.

[6] Annotation—*Lancet*, **2** : 1325, 1957

[7] Atomic Scientists Association—*Lancet*, **1** : 878, 1957.

[8] Nuclear Explosions and Their Effects. Publ. Div., Min. Information & Broadcasting, Government of India, 1956.

[9] Glass, B.—*Science*, **126** : 241, 1957.

[10] Libby, W.—Quoted by Pirie (1957), p. 136.

[11] Weaver, W.—Quoted by Pirie (1957), p. 136.

[12] W. H. O.—Effects of Radiation on Human Heredity, Geneva, 1957.

CURRENT MEDICAL LITERATURE

Prednisone in Congestive Heart Failure

GUTNER AND OTHERS (*Am. J. M. Sc.*, **234** : 281, 1957) from the Department of Therapeutics, New York University—Bellevue Medical Centre, New York, from the clinical observations and from the study of the urinary excretions of sodium, potassium and 17-ketosteroid before and after administration of prednisone (in doses of 20 and 40 mg. daily) in 11 cases of congestive heart failure requiring maintenance digitalis therapy observe :

The over-all effects were those of increased sodium and potassium excretion, decreased 17-ketosteroid output, essentially no change in weight and blood pressure and an amelioration of the cardiac status.

Prednisone may safely be administered to patients in congestive heart failure.

The possible mechanisms of action of prednisone in congestive heart failure are discussed and several explanations have been set forth which are :

(1) Antagonism to the antidiuretic hormone of the posterior pituitary gland; (2) antagonism to the adrenal cortical output of the electrolyte retaining steroid, aldosterone; (3) improvement of myocardial function due to the mobilization of glucose for energy; (4) a direct renal effect upon the excretion of water and sodium, possibly related to an increased glomerular filtration rate; and (5) a group of less delineated actions, such as corticogenic hypothyroidism with its resultant decreased work load upon the heart; increased appetite and feelings of well-being; increased pulmonary ventilatory capacity and erythropoietic stimulation with its subsequent correction of any existent anaemia.

Intranasal Insufflation of Hydrocortisone in Seasonal Allergic Rhinitis

LAKE AND OTHERS (*Proc. Staff Meet. Mayo Clin.*, **32** : 641, 1957) from the Sections of Otolaryngology and Rhinology, Pediatrics and Medicine, Mayo Foundation, in reporting on the results of treatment of seasonal allergic rhinitis with intranasal insufflation of hydrocortisone observe :

Eighteen patients, 15 adults and three children, suffering from recurrent seasonal allergic rhinitis were studied to observe the effect of intranasal insufflation of hydrocortisone powder during the ragweed hay fever season. Symptoms had not been controlled by conventional therapy. The dose suggested by Herxheimer and McAllen, 15 mg. of hydrocortisone daily divided into three doses, was found to be adequate. The daily dose of 5 mg. may be a little small for some children of 7 to 8 years. In only one patient was there any question of local irritation from the use of hydrocortisone powder and it was not possible to tell whether her increased symptoms of hay fever were on a basis of the powder or just an exacerbation of her hay fever. No symptoms of hypercortisonism were noted, and no evidence of infection in the nose occurred during the course of therapy.

It is concluded that a sufficient number of excellent and good results were obtained to indicate that intranasal insufflation of hydrocortisone offers another effective, easily administered form of therapy for the patient with seasonal allergic rhinitis, not controlled by conventional means.

Prednisone in Rheumatoid Arthritis

COHEN AND OTHERS (*J. A. M. A.*, **165** : 225, 1957) from the Arthritis Clinic, Philadelphia General Hospital and the Department of Medicine, Jefferson Medical College in dealing with prolonged treatment of rheumatoid arthritis with prednisone write that the evaluation of treatment of rheumatoid arthritis with prednisone for more than a year leaves little doubt that prednisone and the related steroid, prednisolone, are steroids superior to cortisone, hydrocortisone, and corticotropin. Three important advantages of prednisone have become established, namely, a lack of sodium retention, the absence of increased potassium excretion, and the unlikelihood of the production of hypertension during its use. The incidence of duodenal ulcer was found to be no greater than that encountered in the normal population. Thorn tests were done in a large group to determine possible depression of the adrenal gland. Remission or improvement can sometimes be obtained with prednisone in patients whose treatment with cortisone or hydrocortisone has been unsatisfactory because of undesirable effects or diminution in effect.

Carcinoma of Pancreas and Ampulla of Vater

HSIEN-CHIU AND TS'UI-T'ING (*Chinese M. J.*, **75** : 729, 1957) from the Department of Surgery, Chinese Union Medical College and Peking People's Hospital, Peking, from a clinical analysis of 41 cases of carcinoma of the pancreas and ampulla of vater observes :

In 26 cases the diagnosis was established by autopsy and operative removal or biopsy of the tumour. In 5 patients the diagnosis was made at exploratory laparotomy without biopsy. In the other 10 patients the diagnosis was based upon clinical manifestations alone with exclusion of the possibility of other intra-abdominal carcinoma. Lymph nodes removed from the left supraclavicular region were proved to be metastatic carcinoma in 2 of these 10 patients.

Of the 31 cases with diagnosis confirmed by pathological examination, 7 were periampullary carcinoma, including 6 adenocarcinoma and 1 malignant carcinoid tumour; the others were all pancreatic carcinoma, the location of which was distributed as follows : head, 13 cases; head and body, 2; body and tail, 3; entire gland, 6.

The male female ratio was approximately 3 :1.

It should be noted that about one fourth of the patients were in the age groups 21-40, and half of them were under 50 years of age.

The late result of surgical treatment of pancreatic and periampullary carcinoma has been so far unsatisfactory. The rate of cure has been very low.

The authors maintain that such a status may be improved upon if effort is made along three directions:

(1) Clinicians should be more familiar with the clinical manifestations of this disease and seriously consider its possibility in the differential diagnosis of patients with jaundice, persistent epigastric or back pain, or marked loss of weight without obvious cause. Even in patients with diabetes, upper gastrointestinal bleeding or duodenal obstruction it might be wise to remember to exclude its possibility.

(2) Improvement is desirable upon the present diagnostic methods for pancreatic diseases such as cytological study of duodenal fluid, pancreatic function tests and barium meal study of the stomach and duodenum. A roentgenological method of direct examination of the pancreas would be invaluable if available. These tests would help to further confirm the clinical suspicion and to put exploratory laparotomy on a more acceptable basis.

(3) Improvement of the technical aspect of the radical operation such as reasonable enlargement of the scope of resection based on sound anatomical and pathological knowledge.

Virus Infections of the Eye

Primary virus infections of the eye include trachoma, which still affects tens of millions of people, epidemic keratoconjunctivitis, and inclusion blenorrhoea, which bears kinship to trachoma but is comparatively mild, easily treated, and becoming less common. Conjunctivitis or keratitis may also occur in such infections as zoster, varicella, measles, Newcastle disease, and lymphogranuloma venereum, but many Western clinicians find that the infections of greatest visual and economic importance are caused by the virus of herpes simplex. Primary herpetic infection in children may cause severe keratoconjunctivitis, but in adults involvement of the cornea is almost the rule. Dendriditic keratitis is the typical lesion, but there are several superficial and deep manifestations of which hypopyon ulcer is one of the most important and least well understood. The topical use of corticosteroid is thought to be deleterious in treating herpetic eye infections, and it may (Thygeson and Kimura—*Am. J. Ophthal.*, **43**: 109, 1957) possibly be responsible for the increased incidence of complications in recent years. Whether such treatment acts by increasing virus proliferation or tissue susceptibility is not known, but Kimura and Okumoto (*Ibid*, p. 131) have shown that experimental herpetic infection in rabbits is made worse by administration of such steroids and that fatal encephalitis may ensue. Hogan (*Ibid*, p. 147) claims that certain types of severe recurrent herpetic infection of the human cornea are best treated by transplantations, although he was unable to isolate herpes virus from two grafts removed at keratoplasty. The nature of the symbiotic relation of herpes virus to the corneal or other tissue cells is still a mystery, and we must be sure that the virus does not stray outside the corneal territory before feeling confident that surgical treatment will ensure freedom from further attack.

The other indigenous virus infection of the eyes—epidemic keratoconjunctivitis (E.K.C.)—has been known in the Far East since 1889 but was recognised in the United States only in 1941 when it soon became a threat to industry. Since then there have been many explosive outbreaks on both sides of the Atlantic. It is now believed to be caused by one or more of the adenoviruses which are responsible for several clinically distinguishable infections of the upper respiratory tract and eye. In an article Bennett and her colleagues in Aberdeen (*Lancet*, **2**: 670, 1957) described how E.K.C. begins as a follicular conjunctivitis, which is followed some ten days later by the appearance of round subepithelial corneal opacities or infiltrates. These changes are more severe and persistent than in pharyngoconjunctival fever (P.C.F.), which in any case can be distinguished by systemic symptoms. In P.C.F. the infiltrates are very small and epithelial rather than subepithelial, and appear along with the conjunctivitis. P.C.F. is a disease of children, whereas E.K.C. mainly attacks adults. Swimming-pool transmission of P.C.F. is common in the United States, whereas E.K.C., a much more contagious condition, is not spread in this way but is a particular menace in hospital and eye clinic. Leopold (*Am. J. Ophthal.*, **43**: 93, 1957) and others leave us in little doubt that contaminated eye-droppers, tonometers, and ophthalmoscopes readily spread the disease. Ophthalmologists seem to infect themselves with surprising ease, presumably because like the rest of us they rub their eyes with contaminated fingers; and certainly trauma cannot be an essential predisposing factor. Fortunately one attack of infection produces immunity, for there are no records of second attacks either of E.K.C. or of P.C.F.

The keratitis which follows infection with types 3 and 7 adenovirus seems to be slight and short-lived and is clinically distinguishable from true E.K.C. Type-8 adenovirus, according to Thygeson and Jawetz (*Ibid*, p. 161), has been isolated from the eye only three times, and it is perhaps significant that in the five successful isolations by the Aberdeen workers tissue-cultures of human embryonic kidney were used after HeLa cells had failed. Type-8 virus is biologically different from the other adenoviruses and it has been seldom isolated from sources other than the eye. Serological evidence for the association of type-8 with E.K.C. is fairly good: of 70 clinical cases mentioned by Thygeson and Jawetz (*loc. cit.*) 66 had neutralising antibodies in titres of 1:10 or greater, whereas of 140 unaffected people from the same areas only 10 had such antibodies. Again of 17 paired sera from clinical cases 15 showed a fourfold or greater increase of type-8 antibody, but the titres varied considerably. Experiments in volunteers suggest that typical E.K.C. can be produced by inoculation of type-8 virus into the eyes. The results of the Aberdeen study strongly support this view of the aetiology of the disease, although these workers are careful to note the dangers of generalising about outbreaks when more than one type of virus may be concerned. Now that the Sanders virus, originally thought to cause E.K.C., has been shown to be a variant of St. Louis encephalitis virus, the way is clear for accepting type-8 adenovirus as a cause, and possibly the main cause, of true epidemic keratoconjunctivitis.—(*Annotations, Lancet*, **2**: 683, 1953).

CURRENT TOPIC

MEDICINE, MEN, AND THE VITAL REVOLUTION

ROBERT C. COOK*

The whole world is aware of the destructive potential of nuclear weapons. Somehow that suicidal potential must be transmuted into a realistic atoms-for-peace plan if modern man is to have any hopeful future. If that is accomplished, and it must be in the years just ahead, the atomic age could put at man's disposal vast new sources of power exceeding many times the reserves of the fossil fuels—coal and oil—which turn the wheels of industry today. Once this destructive potential has been successfully harnessed for peaceful purposes, our creative energies must be centred on averting the slow working, insidious dangers posed by the "vital revolution".

It has been said that the "population bomb", the chain reaction increase in numbers of people, can in the long run be as destructive to the human race as the hydrogen bomb. Fortunately its fuse is longer, for biological chain reactions have a different timing. That longer fuse can enable mankind to save himself, if he acts intelligently without wasting the precious minutes as they tick into hours and years.

The man of medicine, whether he likes it or not, sits squarely in the middle of this modern dilemma. Will he rise to the challenge which the vital revolution has thrown at his feet, or will he, already overburdened as he is with specialization, choose to let this great opportunity pass by default? If he accepts the challenge then he must acquaint himself with the basic facts of demography and genetics—two relatively new sciences which impinge increasingly on the medical man's area of interest.

During the first half of the twentieth century, medicine played a major role in changing the life patterns of human beings. In many countries today, and potentially in other all over the world, death in childhood and youth has been drastically reduced. Where a quarter of the children usually died before their first birthday a century ago—in bad years often a half—today in the United States more than nine-tenths of the babies reach voting age.

In most of the industrialized countries today, birth has become increasingly a matter of choice rather than the too often unwanted by-product of primal urges and ignorance. This, too, could spread to all countries. The dramatic change in patterns of birth and death ushered in the "vital revolution" through which mankind is now passing.

What are the dangers of the "vital revolution"? The most urgent is the phenomenal increase in the rate at which human beings are multiplying. This is a direct result of the discovery of ever more efficient methods of death deferment during the past century.

People are obsessed with the idea that population increases occur only through an increase in births, and that birth rates throughout the world are rising. Actually, in the industrial countries, birth rates have been tending downward for a century. The current "baby boom" in the United States is an exception.

In the so-called "underdeveloped countries," birth rates, have always been and still are near a physiological maximum. The dramatic increase in numbers of people, and the speed-up in this increase year after year, is due to declines in death rates. Modern public health methods coupled with modern technology have cut the death rate by a third to a half in a single year in some countries where birth rates have been, and remain, high. The result is a startling increase in the rate of population growth.

Ceylon is a classic example. There a malaria control campaign dropped the death rate from over 20 per thousand of the population to about 14 in one year, 1945-46. It has since continued to edge downward. The birth rate has stood near 40 for many years. It has not declined; if anything it has actually increased slightly since 1950. As a result, population growth sky-rocketed to over three per cent a year in this small, already overcrowded island country which produces only about half the food necessary to sustain 300 people per square mile, in contrast to 50 people per square mile in the United States.

The present rate of increase in Ceylon's population portends ultimate disaster, for the population will double at the present rate of increase in less than 20 years. The only alternatives to an eventual Malthusian tragedy are either a reduction in birth rates or mass emigration. The latter solution as a permanent "out" is purely imaginary. The speed-up of population growth is widespread throughout the world and the siphoning off of multimillions of people each year to shrinking unoccupied areas is neither feasible nor a permanent solution of the problem. From India alone, five million persons per year would have to be moved out to keep the population in balance. That is at the rate of 14,000 per day from one Asian country alone.

The other alternative is to develop effective means of fertility control which can be used to balance the increasingly effective death deferment techniques developed by modern science. Without such a balance present trends are heading many hundreds of millions of people towards mass hunger and ultimate starvation.

It is obviously not an enlightened approach to ignore this tremendous problem and to hope that some miracle of loaves and fishes will make it unnecessary for humankind to exercise reason and foresight. Default rather than enlightened action merely invites Malthusian checks. No human person wants to see the crisis resolved by a rise in death rate in his country or anywhere on earth.

This population problem, generated by the increase in medical knowledge and its widespread application, is definitely a medical problem, even though its solution lies mostly outside the area of medical practice. The understanding and the co-operation of physicians is needed if humane and effective solutions are to be developed

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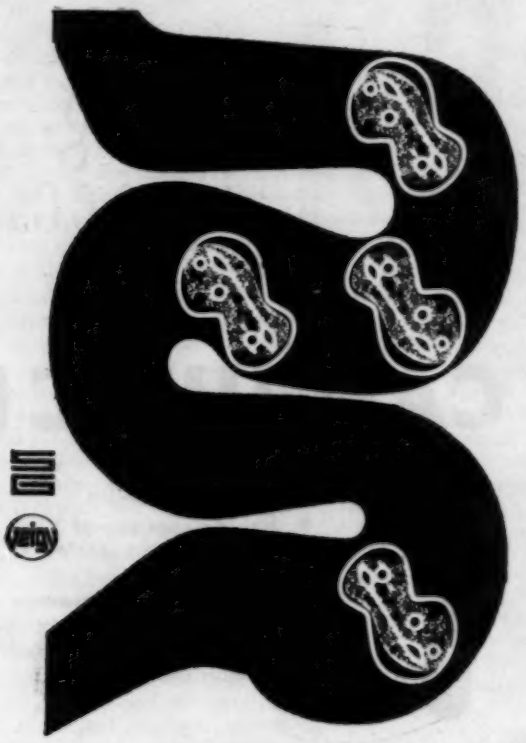

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in time to avoid disaster. Today the daily current net increase of births over deaths in the world amounts to some 85 to 100 thousand people. That is the equivalent to the population of Alexandria, Virginia. Obviously, a compound rate of increase of this magnitude cannot go on indefinitely. Even now hunger is becoming more widespread in Asia, though outright famines are still being prevented. But the trend is ominous. Physicians, pledged to prevent suffering and death, dare not ignore this problem.

Another aspect of the vital revolution which concerns the medical profession is the question of maintaining the hereditary fitness of the human race. Evolution has taken place in living organisms, including man, by the cruel and stringent method of death selection. The variation upon which selection acts is produced by the kaleidoscopic recombination of genes in the process of sexual reproduction, and by the constant production of new mutations at a slow rate. It may seem paradoxical that only very rarely are mutations advantageous to the organism. So that a continuous sifting out of the deleterious mutations is perhaps as important a part of the selective process as the bringing together of advantageous combinations of genes by selective reproduction. X-rays and nuclear fall out can greatly speed up the mutation process, but this cannot be explored here.

This would mean that there would be a slow increase in the frequency of death and disability due to genetic causes. The distinguished geneticist, Dr. H. J. Muller, has recently estimated that about 20 per cent of births must be selectively eliminated either by death or by non-reproduction to avoid an accumulation of morbid genes in the population. Since less than 10 per cent of the population fails to reach reproductive age and since many deaths are non-selective, there would appear to be an inevitable accumulation of morbid heredity even if Dr. Muller's estimate errs on the pessimistic side. Over many generations this could pose serious medical problems and result in the eventual biological disintegration of the human race. Fortunately, this danger is not imminent nor need it involve the crude and cruel expedient of "death selection". For birth selection, if effectively and humanely applied, can be even more effective. It appears that among all members of the human species, the desire for perfect children is so strong that few women can face with equanimity the prospect of bearing malformed or afflicted children. As knowledge of human genetics becomes more adequate, and as the facts of genetics become more widely known one may hope that voluntary abstinence from parenthood will become the rule in those instances where there is adequate evidence that serious hereditary defects will be transmitted to future generations.

At the present time, we do not know enough about human genetics to formulate a comprehensive programme for the long-term conservation of the genetic heritage of our race. Enough is known, however, so that in some family lines, where serious defects have been transmitted for generations, a voluntary stoppage of such continuing tragedies has taken place. No easy solutions are likely to be found. Obviously, this is an area where the difficulties are great, and where knowledge will have to be applied with the utmost delicacy. Nor can the implications of what is now known and what is being discovered in this field be safely ignored.

Fortunately, this problem of maintaining the genetic fitness of the human germ plasm is a long term one which does not demand drastic action this year or next. Even though the build-up of morbid genes is mercifully slow, medical men do have a responsibility to learn the basic facts of genetics so they will be in a position to give—or to obtain from specialists—competent counsel to their patients in those individual cases where existing knowledge permits definite predictions to be made. Pedigree analysis makes it possible to state in some cases that a particular individual will transmit serious genetic defects to his descendants. Again, individuals in the "tainted" line may run no risk of transmitting the defect. Where genetics can give a definite warning or a reassuring "all clear" patient has a right to this knowledge.

This does not mean that the already overburdened general practitioner must become a genetic specialist. The job of the physician is to be adequately grounded in genetic principles so that he can recognize when a genetic specialist is needed. The interpretation of the available data is the province of the expert, just as the localization of a brain tumour requires the skill of a neurologist. Genetic specialists are now to be found in some six institutes of human genetic research in the United States where consultations and analyses of pedigrees are now available.

With the emergence of human genetics, medicine will become not only the conservator of the patient's health but increasingly the conservator of the health of future generations public health with a new dimension added—*time*. With an increasing understanding of genetics, the practice of medicine will gain new insight and interest.

This writer is passionately opposed to the proposition that such matter can be handled by commission, committees, or legislatures. The need is for widespread knowledge and for adequate counselling. The responsibility to disseminate and interpret this knowledge should be assumed in considerable part by the medical profession.

Each patient who appears in a physician's waiting room is, after all, an unique collection of human genes. So diverse is the human germ plasm that no two people are exactly identical. The responses which patients make to various foods and drugs, to the crises of living, and to the daily pressures of keeping up with the Joneses and ahead of the collectors of bills and taxes, are in part conditioned by their genetic make-up. A knowledge of genetics not only will open up new vistas of understanding of the individual patient, it will add a new challenge and fascination to the physician's career.

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NOTES AND NEWS

First Government to Approve WMA Protective Emblem

The Government of the Principality of Liechtenstein became the first to ratify the protective emblem for civilian doctors, medical personnel and medical care establishments.

The Liechtenstein Medical Association approved the emblem as adopted at the Xth General Assembly of the World Medical Association and thereafter submitted it to its government for recognition and jurisdiction. The government decree recognising the status of the protective emblem was signed by Dr. Alexander Frick—Chief of Government.

International Federation of Gynaecology and Obstetrics

The Second World Congress of the International Federation of Gynaecology and Obstetrics, which will be held in the newly-built Queen Elizabeth Hotel in Montreal, Canada, from June 22 to 28, 1958, will have on its programme eight main lectures given by eminent scientists whose studies and research are related to the field of gynaecology and obstetrics.

NAPT Commonwealth Chest Conference

H.R.H. The Duchess of Kent, President of the National Association for the Prevention of Tuberculosis, has promised to attend the inaugural meeing of the NAPT Commonwealth Chest Conference at the Royal Festival Hall on Tuesday, 1st July, and to open the Conference. The Minister of Health, Mr. Derek Walker-Smith, will also be present.

Representatives from thirty-five countries have already promised to attend. The scope of the Conference will be much wider than in the past as the activities of the NAPT have been extended to cover diseases of the chest and heart. The programme will include discussions on the prevention of tuberculosis and other chest diseases—including lung cancer, bronchitis and pneumoconiosis—and on the latest clinical developments in treatment. Other sessions will deal with the welfare and rehabilitation of the patient and his family.

Commonwealth problems will be given special emphasis, but as chest diseases are a matter of international concern, the speakers will include some of the foremost authorities from many parts of the world.

Full particulars of the Conference can be obtained from the Secretary-General, NAPT, Tavistock House North, Tavistock Square, London, W.C. 1.

International Congress of History of Medicine

The 16th International Congress of History of Medicine will take place at the Faculty of Medicine of Montpellier from Monday 22nd to Sunday 28th September, 1958 under the general Presidency of Monsieur le Doyen Girand, dean of that faculty.

Subjects selected for attention are :

1. Connections between the School of Montpellier and the medical institutions of various countries along the centuries.
2. History and expansion of Hospitable establishments.
3. Medical iconography during the XVIIth century.
4. The new world's contribution to therapeutics.
5. Varia.

Further particulars may be had from Monsieur le Professeur Turchini, President du Comite d'Organisation, Faculte de Medecine, Montpellier, (Herault), (France).

Diploma in Clinical Pathology

The one year's course of instruction for the Diploma in Clinical Pathology under the Faculty of Tropical Medicine and Hygiene, West Bengal, will begin on the 1st July, 1958. This course is open to medical graduates or candidates possessing equivalent qualifications with at least one year's experience as House Medical Officer or Pathologist in a recognised institution. Applications for admission in the prescribed form (obtainable from the office) should reach the Director, School of Tropical Medicine, Calcutta, by the 31st May, 1958.

Symposium on Vegetable Oils and Their Products

A Symposium on Vegetable Oils and their products will be held in October, 1958, in New Delhi under the auspices of the National Institute of Sciences of India. The scope and subject for discussion have been kept wide and broad so that all interested in the science and technology of vegetable oils may contribute to the success of the symposium.

Rural Health Project at Gandhigram

For organising a Pilot Health Service programme in collaboration with the Indian Council of Medical Research and the Government of Madras, the Ford Foundation have approved a grant of $205,500 to Gandhigram. The main objectives of the Project are to determine through a base line survey, present patterns by which people in the Gandhigram area meet their health problems and to establish and evaluate a modern type of rural health service adapted to India's needs.

A sum of Rs. 32,000 for the base-line survey has been sanctioned by the Indian Council of Medical Research and the work which commences from April 1958, is likely to last for a period of 18 months.

Occupational Health

The establishment of institutes of occupational health at the different stages of industrialisation was suggested by Dr. U. Krishna Rao, Speaker of the Madras Legislative Assembly, inaugurating the ninth All-India Conference of the Society for the study of Industrial Medicine at the Medical College on 14-2-58.

Dr. Krishna Rao in his inaugural address said, the problems of industrial accidents being on the increase, sufficient attention should be paid to this aspect. He suggested that the occupational medical institutions could be affiliated to the universities also. He said the Employees' State Insurance scheme is only complementary and can never replace the existing health service of industries. He also wanted the merger of the Society for the Study of Industrial Medicine and the I.M.A.

Delhi Schemes for Tuberculous Patients

Details of the Government's antituberculosis programme for Delhi were given in the Rajya Sabha by the Health Minister on 13-2-58.

The following schemes, he said, had been implemented in Delhi during the current financial year:

(i) Establishment of a tuberculosis clinic at Shahdara; (ii) Establishment of a 52-bed ward at the Tuberculosis Hospital, Mehrauli, for advanced cases. (iii) A sum of Rs. 35,000 has been sanctioned to the T.B. Association of India and the Social Welfare and Rehabilitation Directorate, New Delhi, for giving cash assistance to indigent displaced tuberculosis patients from West Pakistan.

100-Bed Tuberculosis Hospital at Chandpur

The Chief Minister of Orissa, Dr. Harekrushna Mahatab, declared open the Basanta Manjari Swasthya Nivas, a 100-bed tuberculosis Hospital at Chandpur, about 65 miles from Cuttack. The construction of the hospital was entrusted to a non-official committee with the Health Minister, Sm. Basanta Manjari Devi as Chairman.

The Swasthya Nivas is situated in idyllic surroundings abont 20 miles from the sub-divisional headquarters of Khurda, 28 miles from the nearest railway station, Khurda Road. A spacious building consists of 100 beds with a total cost of Rs. 6,30,000, has been built there, to house the main building, the x-ray department and the quarters for the staff. The building has been fitted with modern equipment for taking radiographs. The unit has attached to it, a patrician table which can be positioned at any angle and at the same time the patient can be conveniently placed for radiography. The screening can be done with great safety to the patient and the operator.

Development of Nutrition

The second All-India Nutrition Conference, which concluded its two-day session at Ambala on 16-2-58 underlined the need for intensive, broadbased and co-ordinated work for the development of nutrition.

Papers were read by nutritionists from various States on the problems of nutrition.

The conference felt that intensive co-ordinated work of this type had not been undertaken in some States and, therefore, pointed out that the time had now come to undertake this work on a broader basis. It recommended to the Government that such evaluation and assessment programmes should be undertaken in suitably selected community project areas and National Extension Service blocks having common dietary patterns.

Health of School Children

The Kerala Government proposes to introduce a system of medical inspection and follow-up medical care for school children on the lines of the recommendation of the Secondary Education Committee, it was officially announced.

Under the system, every pupil will be 'thoroughly' examined once every year by a competent medical officer and will receive, if necessary, adequate medical attention in the nearest hospital or dispensary. For the present, the medical inspection system will be confined to lower primary school children owing to paucity of qualified medical personnel. All hospitals in the State will give priority to children coming from schools under instruction from these medical inspectors. Certain specific hours or one or two days in a week will be reserved in the dispensaries and hospitals throughout the State for the medical care of school children.

Need for More Hospitals and Psychiatrists

There are probably more than 1·5 million mentally ill persons needing hospitalisation in India today. This somewhat alarming estimate of the Bhore Committee was mentioned by Bombay's Health Minister, Mr. M. S. Kannamwar, while inaugurating the eleventh annual conference of the Indian Psychiatric Society, at Poona on 7-2-58.

He said hospital accommodation for the mentally ill was far short of the demand. The problem could be effectively tackled only with more hospitals and psychiatrists appreciative of both curative and preventive treatment.

In a country like the U.S., the money spent by the Government on the treatment of mental diseases and hospitals amounted to half the entire expenditure on health services. In India, it would be impossible even in the next 50 years to provide a number of hospital beds commensurate with the incidence of insanity both on account of lack of finances and of psychiatrists, social workers and nurses.

CORRESPONDENCE

The Editor is not responsible for the views expressed by correspondents

Pay, Status and Remuneration of Medical Men in Services under the Government of India

SIR,—All doctors under employment of the Central Government are grateful to I.M.A. for the magnificent and rational manner in which it has represented the demands to the 2nd Central Pay Commission in the form of a memorandum (*J. Indian M. A.*, **29**: 486, 1957). Apart from Pay-scales, the doctors in Central Service specially in railways, are debarred from many privileges of the profession, and future prospects for them are limited. The I.M.A. has rightly suggested a gazetted status for all doctors. In this connection attention of the Government is invited to Appendix II of the questionnaire issued by the Pay-Commission in which Assistant Surgeons Grade I in C.P.C. scale 260-15-440-20-500 is listed in Class II service but in practice this post is in Class III and non-gazetted in Railways. Will Government rectify? I am etc.

Interested.

REVIEWS

Atlas of Clinical Endocrinology—including text of Diagnosis and Treatment—By H. Lisser, A.B., M.D. and Roberto F. Escamilla, A.B., M.D. Board bound, 11¼ × 8¾ inches, 476 pages, with 148 art plates including 3 in colour. The C. V. Mosby Company, St. Louis, U.S.A., 1957. Price $8.75.

The majority of endocrine diseases exhibit a multiplicity of physical manifestations readily recognised by the trained observer. The experience of many physicians even of those who have practised medicine for a long time, however, does not often include a variety of endocrine problems. Although laboratory investigations frequently offer essential help, the diagnosis and appropriate treatment of the endocrine disorders mostly rest in the main upon clinical evidence. With very extensive experience as their background, the authors have presented in this book a concise and largely visual presentation of endocrine disorders in an atlas format, with an abbreviated text which contains all the essentials for adequate diagnosis and therapy. A perusal of the book enables the reader to fully appreciate the truth of the expressed hope and belief of the authors "that an atlas, because of its pictorial approach, will provide the simplest and most direct avenue for learning and understanding clinical endocrinopathies not only for the medical student and the practising physician, but for the surgeon and specialist as well." The authors present the atlas to the reader as a clinical work by and for clinicians. This book deserves the honoured place of a classic.

Bedside Diagnosis—By Charles Seward, M.D., F.R.C.P. (EDIN.) with a foreword by Lord Cohen of Birkenhead, M.D., D.SC., LL.D., F.R.C.P., F.A.C.P., F.F.R. Fourth edition, 1957; cloth bound, 7¼" × 5", 430 pages. E. & S. Livingstone Ltd., Edinburgh and London. Price 21*s.* net, regd. postage 1*s.* 4*d.*

The medical students and practitioners who read and assimilate this practical handbook would easily find that the author bases his text on the concept of disease as a disturbance of function which may or may not be accompanied by structural change, and that the author stresses that the causes of disease are often indicated by the grouping and mode of development of symptoms and signs. In this book the author discusses most of the common presenting symptoms of disease, both of body and mind, thus enabling the student reader to realise the necessity to recognise not only the influence of mind on body but also of body on mind. There are 23 chapters dealing with the subject matter following the most important or the presenting symptom or sign, followed by one chapter on "Normal Values". Although a concise handbook, the subject has been ably handled, which would enable the student, going through the medical wards, to proceed rationally and approach the clinical problems presented by his patients in a practical and confident manner. This book is likely to be a useful guide for busy practitioners and medical students.

OBITUARY

Dr. N. L. Ranade

Dr. Nilkanth Laxman Ranade, passed away on the 2nd February 1958 after a very prolonged and exhausting disease.

Dr. Ranade was born in 1889 in a village about 80 miles from Poona. He joined the Fergusson College, Poona in 1906. He took his B.A. degree in 1910, and joined the Grant Medical College, Bombay in the year 1910. He took his MBBS degree from that college in 1915.

Dr. Ranade joined the Bombay Medical Service in 1916 and was posted as general duty officer at the Sassoon Hospital, Poona.

DR. N. L. RANADE

After a few years in Government service which he left in 1918 he took to general practice in Poona.

Since 1918 Dr. Ranade has been on the forefront in all medical and allied social activities in Poona. He has been associated with the Poona Seva Sadan Society, and was also a member of the Bombay Nursing Council for a period of five years.

In 1930 Dr. Ranade took a prominent part in the formation of the Poona Branch of the I.M.A. and was its first Hony. Secretary. During his stewardship of the Poona Branch, the All India Medical Conference was held in Poona in 1931 and the Maharashtra and Karnatak Provincial Conference in 1944. He was the President of the Poona Branch in 1944-45.

In 1937-38 Dr. Ranade with the help of Dr. Mulay formed the Maharashtra and Karnatak Provincial Branch of the Indian Medical Association. Dr. Ranade was elected as President of the Maharashtra and Karnatak Provincial Conference at Belgaum in 1947. The I.M.A. suffered a great loss in Dr. Ranade's death.

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ASSOCIATION NOTES

I.M.A. CENTRAL COUNCIL –*Proceedings of the 18th Annual Meeting of the Central Council of the Indian Medical Association held at Bangalore on the 24th and 25th December, 1957.*

(As confirmed at the ordinary meeting of the Central Council held at Bangalore on the 28th Dec. 1957).

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Dr. Dilip Kumar Sen (Kalyani). 109. Dr. R. N. Chatterjee (Jabalpur). 110. Dr. S. N. Sengupta (Assam). 111. Dr. G. K. Kulkarni (Nagpur). 112. Dr. N. K. Sen (Calcutta). 113. Dr. M. K. Chakraborty (Tinsukia). 114. Dr. N. G. Roy (Bankura). 115. Dr. A. K. Ghosh (Jamshedpur). 116 Dr. R. P. De (Chaibasa). 117. Dr. S. N. Kelkar (Indore). 118. Dr. T. J. Lalwani (Bombay). 119. Dr. P. K. Roy Chaudhury (Baruipur-Rajpur). 120. Dr. R. N. Roy Chowdhury (Gocharan). 121. Dr. Raj Kumar Roy (Calcutta). 122. Dr. Kali Ganguli (Ghughudanga). 123. Dr. G. M. Chatterjee (Titagarh). 124. Dr. (Capt.) S. Ukil (Bankura). 125. Dr. S. K. Sen (Calcutta). 126. Dr. N. C. Bagchi (Dooars). 127. Dr. S. P. Bhacca (Surat). 128. Dr. G. V. Pandit (Yeotmal). 129. Dr. Hari Shankar Prasad (Motihari). 130. Dr. A. R. Sen (Amalner). 131. Dr. M. V. Surya Prakasa Rao (Chittoor). 132. Dr. Satya Narayan (Hazaribagh). 133. Dr. C. O. Karunakaran (Trivandrum). 134. Dr. Rabindra Nath Samanto (Ballichak). 135. Dr. M. C. Malhotra (Unnao). 136. Dr. Y. D. Kapur (Faizabad). 137. Dr. D. N. Gupta (Burdwan). 138. Dr. V. Krishnamurti (Cuddalore). 139. Dr. G. D. Dhalla (Delhi). 140. Dr. Mahesh C. Gupta (Delhi). 141. Dr. S. Chowdhury (Giridhi). 142. Dr. J. C. Das Gupta (Chapra). 143. Dr. M. Rama Rao (Chitradurga). 144. Dr. J. Dei (Cuttack). 145. Dr. K. P. Mitra (Fuleswar). 146. Dr. M. J. Rajanna (Chikmagalur). 147. Dr. Subodh Mitra (Bhagalpur). 148. Dr. Priya Lal Ghosh (Calcutta). 149. Dr. A. G. Harinath (Barsi). 150. Dr. P. Krishna Murty (Trivandrum). 151. Dr. B. M. Ambady (Trivandrum). 152. Dr. B. V. Rama Rao (Belgaum). 153 Dr. (Capt.) T. B. S. Murty (Tumkur). 154. Dr. Debesh Mukherji (Calcutta). 155. Dr. Ranabir Mukherji (Calcutta). 156. Dr. S. T. Puttane (Mysore). 157. Dr. D. Krishnamurti (Shimoga). 158. Dr. K. N. Misra (Cuttack). 159. Dr. T. S. Ahobalachar (Kolar). 160. Dr. N. L. Narayana Rao (Bangalore). 161. Dr. K. Damodaran

(Mavelikara). 162. Dr. U. B. Narayan Rao (Bombay). 163. Dr. R. L. Shah (Rajkot). 164. Dr. H. N. Dewan (Delhi). 165. Dr. (Mj.) H. C. Mallik (Bihar). 166. Dr. Haranath Mukherjee (Dhanbad). 167. Dr. Satya Ranjan Chatterjee (Asansol). 168. Dr. H. N. Shivapuri (U. P. Branch). 169. Dr. M. M. S. Siddhu (U. P. Branch). 170. Dr. R. N. Gupta (Lucknow Branch). 171. Dr. K. V. Swami (Madras). 172. Dr. M. V. Ramananna (Berhampore). 173. Dr. A. K. Maitra (Tollygunj). 174. Dr. S. N. P. Agrawal (Samastipur). 175. Dr. P. Chatterjee (Howrah). 176. Dr. K. Chatterji (Barrackpore). 177. Dr. P. M. Roy (Dum Dum). 178. Dr. Amir Chand Narula (Delhi). 179. Dr. D. R. Khurana (Delhi). 180. Dr. C. Arumugam (Coimbatore). 181. Dr. Rajamangal Singh (Deoria). 182. Dr. S. Zahid Ali (Bareilly). 183. Dr. V. R. Sane (Khamgaon). 184. Dr. B. Choudhuri (Bankura). 185. Dr. N. D. Mudaliar (Amravathi). 186. Dr. T. K. Babur (Bombay West Suburban Branch). 187. Dr. A. K. Gupta (Purulia). 188. Dr. D. G. Ojha (Rajasthan State Branch). 189. Dr. C. N. Chandrachud (Poona). 190. Dr. M. Y. Mirzo (Hyderabad). 191. Dr. M. C. Nanjappa (Davangere). 192. Dr. G. V. Joshi (Hubli). 193. Dr. M. Vasudeva Rao (Hyderabad). 194. Dr. N. Lakshmikanta Sastry (Vijawada). 195. Dr. D. N. Ghose (Calcutta). 196. Dr. Major O. K. Sankaran (Calicut). 197. Dr. S. U. Ganguly (Jamshedpur). 198. Dr. A. K. Chatterji (Kolaghat). 199. Dr. H. S. Chakravarti (Asst. Editor Journal). 200. Dr. W. R. Kopre (Akola). 201. Dr. V. S. Tople (Akola). 202. Dr. M. M. Waradpande (Wardha). 203. Dr. Thakur Raj Nath Singh (Hathwa). 204. Dr. Somanna (Hassan). 205. Dr. S. Balasubramaniam (Trichinopoly). 206. Dr. Valluri Narasimha Rao (Erulu). 207. Dr. R. Sreenivasa Reddy (Kurnool). 208. Dr. K. P. Mehrotra (Hony. Secretary, Kanpur Branch). 209. Dr. T. M. Kumaraswami (N.A. Dist Branch, Vellore). 210. Dr. H. S. Lakshminarayana (Bangalore). 211. Dr. D. P. Jayaram (Bangalore). 212. Dr. Shirvir Singh (Kotah Branch). 213. Dr. D. Prasad (Hajipur). 214. Dr. S. M. Tiwari (Jhalwar). 215. Dr. C. Ramakrishna (Ongole). 216. Dr. C. Nathamani Naidu (Vellore). 217. Dr. R. V. Sathe (Bombay). 218. Dr. K. G. Sadagopan (Madras). 219. Dr. Souren Sengupta (Calcutta). 220. Dr. B. K. Modak (Kalyan). 221. Dr. H. Syed Ali (Hyderabad). 222. Dr. M. S. Bhat (Amreli). 223. Dr. Kamdar (Bhavnagar). 224. Dr. N. H. Seth (Dohad). 225. Dr. Prem Narain (Delhi). 226. Dr. M. Gurudas (Bangalore). 227. Dr. V. S. Viswanathan (President, Bangalore Branch). 228. Dr. Nirmal Sen (Calcutta). 229. Dr. K. Krishna Rao.

I. *Election, if necessary (in the absence of the President and Vice-President) of the Chairman.*

The President, Dr. C. S. Thakar took the chair.

Resolution of condolence :

The house passed a resolution of condolence for the deceased members of the Association, the names having been recorded in the proceedings of the meetings of the Working Committee during the year.

II. *Confirmation of the Proceedings of the 77th Ordinary Meeting of the Central Council held at Trivandrum on the 28th December, 1956.*

The Proceedings of the 77th Ordinary meeting of the Central Council held at Trivandrum on 28th December, 1956 as circulated, were duly confirmed as proposed by Dr. Arvind Shah (Bombay) and seconded by Dr. M. A. Panwala (Ghatkopar).

III. *Annual Report of the I.M.A. for the year 1956-57.*

The Annual Report as approved by the Working Committee was taken up for consideration.

The Central Office detailed the steps with regard to the various matters mentioned in the Report.

A. *Life Insurance Corporation.*

The house was informed of the decision of the Working Committee to prepare comprehensive memorandum on this subject. The delay had occurred because of non-availability of information in response to a Central Office circular to the State/Territorial Branches of the I.M.A.

B. *Condensed M.B.B.S. Course for Licentiates.*

The Central Council felt that the question of negotiations with the authorities concerned for the continuation of the Condensed M.B.B.S. Course should be resumed. A Sub-Committee comprising of (1) Dr. B. P. Trivedi, (2) Dr. Salil Dutt, (3) Dr. Rajat Sen, (4) Dr. J. Mojumdar, (5) Dr. N. Bhattacharya and (6) Dr. Sukomal Sen (Convener) with powers to co-opt, was appointed to explore the possibility of continuance of the Condensed M.B.B.S. Course and to suggest the line of action. This sub-committee was to report before the next meeting of the Working Committee meets.

C. *D.T.M. Course.*

Dr. N. Bhattacharya pointed out that the deputation led by Dr. A. C. Ukil as mentioned in the report, took place in the year 1956 and not in the year 1957, as reported by the relevant Sub-Committee. The Central Office informed the house that the Working Committee in its last meeting had already decided to pursue negotiations and had appointed a Sub-Committee for the purpose.

D. *Employees' State Insurance Corporation.*

The detailed information as given out by the Central Office and recorded in the minutes of the last meeting of the Working Committee, was brought to the notice of the Central Council and it approved the line of action being taken.

E. *Family Planning.*

The Central Office informed the house the latest position.

F. *I.M.A. Building Fund.*

The Central Council was informed about the latest position regarding the building plans and the building fund. Several donations in cash and promises were announced during the meeting. (The names to be published in the Journal in due course).

The following resolution proposed by Dr. S. C. Sen and seconded by Dr. P. C. Bhatla, was unanimously passed.

"Resolved that the names of the members of the I.M.A. who contribute Rs. 1,000/- or over be inscribed on a suitable tablet in the new building."

G. *Drugs Rules 1945 as amended in 1957.*

The information about the representation made by the Association concerning the availability of medicines at wholesale rates to the registered medical practitioners, was given to the house and the written assurance by the Directorate General of Health Services to that effect, was read out.

H. *Formation of local Branch.*

Arising out of the proceedings of the Working Committee meeting held at Bangalore on the 22nd and 23rd December, 1957, the question of recognition of Dhakuria Branch (West Bengal State Branch) was considered. There was a strong feeling in the house that the action of the Working Committee of the West Bengal State Branch was justified. At the request of the President, it was agreed to submit the information already with Central Office along with the particulars to be obtained from the West Bengal State Branch and the branches concerned in this connection, for necessary consideration by the Working Committee at its next meeting.

The Annual Report (Central Office) and (Journal Dept.) was then adopted as proposed by Dr. Yusuf Mirza and seconded by Dr. A. C. Narula.

IV. *Adoption of Annual Audited Accounts, 1956-57.*

(1) *Central Office.*

The Audited Accounts of the Central Office, as submitted by the Working Committee were passed. Dr. M. A. Panwala proposed and Dr. P. R. Trivedi seconded.

(2) *Journal Office.*

The Audited Accounts of the Journal Department, as submitted by the Working Committee were passed. Dr. C. N. Chandrachud proposed and Dr. Yusuf Mirza seconded.

(3) *"Your Health".*

The Editor appealed to the House that the individual members of the Central Council should make all efforts to increase the circulation of "Your Health" by approaching libraries, colleges and other local bodies.

The audited accounts of "Your Health" as submitted by the Working Committee were duly passed. Dr. Yusuf Mirza proposed and Dr. M. A. Panwala seconded.

V. *Budget Estimates for the year 1957-58.*

Central Office.

The Central Council decided to deduct Rs. 5,000/- from Item No. 7 "Travelling Allowance" of the Budget Estimate. A sum of Rs. 10,000/- under item No. 12 (ii) provision made for an Executive Officer at the Central Office, was also taken out. With these modifications, the total Budget Estimate (expenditure) as a result amounted to Rs. 1,25,862·50 nP. The budget was passed as proposed by Dr. Arvind Shah (Bombay) and seconded by Dr. D. G. Ojha (Jodhpur).

Journal Office.

The Budget Estimates of the Journal Department as presented by the Working Committee was duly adopted on the proposal of Dr. H. N. Shivapuri and seconded by Dr. Salil Dutt with the following modifications.

(1) The Central Council increased the amount by Re. 1/- under the heading "Blocks ond Designs."

(2) A new item of expenditure was added, viz. "Transfer to I.M.A. Building Fund". In the present budget Rs. 5,000/- was provided under the head. Consequent to this change the excess of Income over expenditure was to be shown as nil. As a result of this, the total budget estimates of expenditure came to Rs. 3,72,001·00.

"Your Health".

The budget as presented by the Working Committee was adopted. Proposed by Dr. Souren Sengupta and seconded by Dr. B. K. Modak.

VI. *Election of Office bearers (Under Bye-law 47).*

President : Dr. D. V. Venkappa (Madras)
Vice-Presidents : 1. Dr. S. P. Nath (Silchar)
2. Dr. J. C. Banerjea (Calcutta)
3. Dr. G. S. Melkote (Hyderabad)
} as already announced

Hony. General Secretary :

Dr. A. P. Mittra (New Delhi)
—Proposed by Dr. P. C. Bhatla (Delhi)
Seconded by Dr. H. N. Shivapuri (Lucknow).

Elected unanimously.

Two Honorary Joint Secretaries resident at the Headquarters.

1. Dr. Ved Prakash (New Delhi)
—Proposed by Dr. A. P. Mittra (New Delhi)
Seconded by Dr. Prem Narain (Delhi).
2. Dr. P. C. Bhatla (Delhi)
—Proposed by Dr. A. P. Mittra (New Delhi)
Seconded by Dr. Prem Narain (Delhi).

Both elected unanimously.

Third Hony. Joint Secretary.

The following two names were proposed :—

1. Dr Sukomal Sen (Calcutta)
—Proposed by Dr. Arvind M. Shah (Bombay)
Seconded by Dr. K. N. Bose (Delhi).
2. Dr. T. S. Balasubramaniam (Trichy)
—Proposed by Dr. K. V. Swamy (Madras)
Seconded by Dr. (Major) C. K. Sankaran (Calicut).

The Scrutineers Dr. Yusuf Mirza (Hyderabad) and Dr. A. P. Shukla (Ahmedabad) appointed by the President, scrutinised the ballot papers and reported the following :

"Total Number of Ballot papers : 138
Votes secured by :
Dr. Sukomal Sen —94
Dr. T. S. Balasubramaniam —44"

Dr. Sukomal Sen (Calcutta) was declared duly elected as the Honorary Joint Secretary.

One Hony. Asst. Secretary at the Headquarters.

Dr. D. S. Mehra (Delhi)
—Proposed by Dr. A. P. Mittra (New Delhi)
Seconded by Dr. P. C. Bhatla (Delhi).

Elected unanimously.

Two other Hony. Asst. Secretaries.

1. Dr. K. V. Swamy (Madras)
—Proposed by Dr. A. P. Mittra (New Delhi)
Seconded by Dr. P. C. Bhatla (Delhi).
2. Dr. George Patnaik (Cuttack)
—Proposed by Dr. A. P. Mittra (New Delhi)
Seconded by Dr. Ved Prakash (New Delhi).

Both elected unanimously.

Honorary Treasurer.

Dr. R. C. Goulatia (New Delhi)
—Proposed by Dr. A. P. Mittra (New Delhi)
Seconded by Dr. P. C. Bhatla (New Delhi).

Elected unanimously.

Editor, Journal of the I.M.A.

Dr. P. K. Guha (Calcutta)
—Proposed by Dr. Ved Prakash (New Delhi)
Seconded by Dr. P. C. Bhatla (New Delhi).

Elected unanimously.

Two Asst. Editors, Journal of the I.M.A.

1. Dr. C. L. Mukherjee (Calcutta)
—Proposed by Dr. P. K. Guha (Calcutta)
Seconded by Dr. Ved Prakash (New Delhi).
2. Dr. H. S. Chakravarti (Calcutta)
—Proposed by Dr. P. K. Guha (Calcutta)
Seconded by Dr. Ved Prakash (New Delhi).

Both elected unanimously.

Hony. Secretary, Journal of the I.M.A.

Dr. R. Sinha (Calcutta)
—Proposed by Dr. P. K. Guha (Calcutta)
Seconded by Dr. Ved Prakash (New Delhi).

Elected unanimously.

VII. *Election of the Journal Committee.*

Along with the above, under Bye-law 42 (f), the following nominations were made :

1. Dr. P. C. Sen Gupta (Calcutta)
2. Dr. J. B. Chatterjea (Calcutta)
3. Dr. Souren Sengupta (Calcutta)
4. Dr. B. P. Tribedi Calcutta)
5. Dr. A. N. Roy (Calcutta)
—Proposed by Dr. P. K. Guha (Calcutta)
Seconded by Dr. Salil Dutt (Calcutta).
6. Dr. J. Mojumdar (Calcutta)
—Proposed by Dr. H. Mukherjee (Dhanbad)
Seconded by Dr. Y. Mirza (Hyderabad).

The scrutineers, Dr. M. A. Panwala (Bombay) and Dr. G. V. Pandit (Yeotmal), appointed by the President submitted the following result of the ballot :

"Total ballot papers ... 91
Invalid ... 1
Ballot papers counted ... 90
Votes secured :
1. Dr. J. B. Chatterjea ... 69
2. Dr. B. P. Tribedi ... 69
3. Dr. A. N. Roy ... 65
4. Dr. Souren Sengupta ... 65
5. Dr. P. C. Sen Gupta ... 64
6. Dr. J. Mojumdar ... 34

The President declared the first five in the above list of names as duly elected as members of the Journal Committee.

VIII. *Appointment of the Auditors for auditing the accounts of the Central Office and Journal Department.*

The Central Council appointed the following :—

(a) M/s. B. R. Maheswari & Co.,
Chartered Accountants, Delhi, as the Hony. Auditors of the Association (Central Office) at Delhi.

(b) M/s. G. Basu & Co.,
Chartered Accountants, Calcutta as the Hony. Auditors of the Association (Journal Department) at Calcutta.

IX. *Appointment of the Honorary Legal Advisers for the Central Office at Delhi and the Journal Office at Calcutta.*

The Central Council appointed the following :

1. Mr. K. K. Raizada (Delhi) as the Hony. Legal Adviser at Delhi.
2. Mr. R. K. Deb (Calcutta) as the Hony. Legal Adviser at Calcutta.

Operation of Banks Accounts.

The following resolutions were passed unanimously :

1. "Resolved that the Accounts of the Indian Medical Association will jointly be operated by the Hony. General Secretary or any one of the Hony. Joint Secretaries at Delhi, with the Hony. Treasurer".
2. "Resolved that the Imprest Account of the Journal of the Indian Medical Association will be operated jointly by two of the following officers, viz. the Editor (Dr. P. K. Guha), the Assistant Editors (Dr. C. L. Mukherjee and Dr. H. Chakravarti) and the Hony. Secretary of the Journal (Dr. R. Sinha)".
3. "Resolved that Dr. P. K. Guha, the Editor and Dr. R. Sinha, the Hony. Secretary, be authorised to operate the accounts of "Your Health" of the Indian Medical Association".

In this connection, the Hony. General Secretary read but a letter dated 25-12-57 from Dr. P. K. Guha, Hony. Editor, Journal I.M.A. and the house passed the following resolution unanimously :

"Resolved that the Journal of the Indian Medical Association, Calcutta be authorised to open an Imprest Account of the Journal of the Indian Medical Association with the United Bank of India Ltd., New Market Branch, Calcutta. The Account as and when opened would be operated jointly by two of the following officers, viz., the Editor (Dr. P. K. Guha), the Assistant Editors (Dr. C. L. Mukherjee and Dr. H. Chakravarti) and the Hony. Secretary of the Journal (Dr. R. Sinha)".

X. *Consideration of amendments to the Rules and Bye-laws of the Association.*

The Central Council decided to group resolutions having the same purport relating to same Rules or Bye-laws for consideration.

RULES :

Rule No. 6

1. *Proposed by Dr. M. M. S. Siddhu (Lucknow) and Dr. D. G. Ojha (Jodhpur).*

Be changed to—"All Local Branches in a State or Union Territory shall form a group to constitute a State or Territorial Branch".

This amendment to be made effective from 1-4-1958.

2. *Proposed by the President, Madhya Pradesh State Branch.*

"The Central Working Committee be requested to reconsider its recommendation to the Central Council regarding the reorganisation of the constituents of the M. P. State Branch and to allow the area of Vidarbha to form a separate territorial branch as it has been recommended in the case of Bombay, Maharashtra and Gujarat".

3. *Proposed by the Madhya Pradesh State Branch I.M.A.*

"Resolved that the Branches from old Madhya Pradesh State Branch going to the new Bombay State shall form into territorial branch and will be known as Vidarbha Territorial Branch".

4. *Proposed by the Kutch Territorial Branch.*

(1) "If the Central Office of the I.M.A. asks this branch to merge with the 'Gujarat & Saurashtra Territorial Branch' the new branch thus formed should be named "The Gujarat Saurashtra and Kutch Territorial Branch".

(2) "At least one member from Kutch area should be taken wherever applicable e.g. Central Working Committee, Central Council".

There was a general discussion on the subject of the re-organisation of State and Territorial Branches to amend Rule 6 in the light of the above resolutions.

1. The following amendment as an addition to the resolution of Dr. Siddhu and Dr. Ojha was moved by Dr. G. V. Pandit (Yeotmal) and seconded by Dr. M. A. Panwala (Bombay)

"except Bombay, Vidarbha, Maharashtra (including Marathwada) and Gujarat & Saurashtra (including Kutch)"

The amendment was put to vote and carried by 53 in favour and 23 against. The amended resolution reading as under was put to vote with 42 in favour and 28 against out of a total of 104 members present in the house and was declared ineffective by the President under Rule 45 dealing with amendments to Rules and Bye-laws etc.

"All Local Branches in a State or Union Territory shall form a group to constitute a State or Territorial Branch, except Bombay, Vidarbha, Maharashtra (including Marathwada) and Gujarat & Saurashtra (including Kutch)."

2 & 3. The resolutions 2 & 3 were taken into consideration and voted upon with 45 in favour and 31 against. The President declared the resolutions to be ineffective under Rule 45.

4. This resolution could not be considered in view of the acceptance by the house of the amendment to Dr. Siddhu's resolution (No. 1 above) and hence was withdrawn.

Rule No. 12

Proposed by Dr. A. P. Mittra, Hony. General Secretary, I.M.A. Delhi and seconded by Dr. Ved Prakash.

"Any person possessing medical qualifications as defined in the Indian Medical Degrees Act, 1916 (Act VII of 1916) and duly registered in any one of the State Medical Councils in India, will be eligible for membership".

The following amendment was moved by Dr. S. C. Sen (New Delhi) and seconded by Dr. D. S. Mehra (Delhi) :

To add the words "under the Indian Medical Council Act as amended in 1956"

which was accepted by the mover, and the amended resolution to read as under :—

"Any person possessing medical qualifications as defined in the Indian Medical Degrees Act, 1916 (Act VII of 1916) and duly registered under the Indian

Medical Council Act as amended in 1956 in any one of the State Medical Councils in India, will be eligible for membership".

The consequential change needed in Bye-laws 24-b (2) would be as under :—

After the word "deregistration" add "except in case of non-payment of renewal of fees, if any, in the registering Council".

On being put to vote, it was carried by a majority of 68 against 3 in a house of 104 members.

The President declared the amendment to Rule 12 as effective as required under Rule 45.

Rule 32

1. *Proposed by Dr. M. M. S. Siddhu (Lucknow) and seconded by Dr. D. G. Ojha (Jodhpur).*
Elected members, Branch Representatives, Central Council.

The representations from the local branches be as follows :—

10—100 members—One representative.
After 100 members—One additional representative for every 100 members or a part thereof.

The Local Branches shall pay to the Central Office Rs. 10/- per annum per representative, as per list maintained in the Central Office.

2. *Proposed by the U. P. State Branch.*

The representation from the local branches be as follows :—

10—100—One representative.
101—200—Another representative and so on.

The local branches be asked to contribute Rs. 10/- per representative on the Central Council.

3. *Proposed by Dr. A. P. Mittra, Hony. General Secretary, I.M.A. Delhi.*

"Representatives from the local branches and from Direct Members (attached to a State or Territorial Branch) shall be according to the total membership strength of the respective State or Territorial Branch, in the following scales :

200—500 members—5 representatives.
For each additional completed unit of 150 members —one representative.

The State or Territorial Branch shall determine electoral areas to distribute its available representation equitably with its jurisdiction. Two or more contiguous smaller local Branches may be joined together to form an electoral area by the State or Territorial Branch after consulting the Local Branches concerned.

In determining the representation to the Central Council, the total strength or the State or Territorial Branch shall be calculated each year on the number of members on the register, on behalf of whom the C.F.C. has been paid in full, by the 30th of September. A complete list of membership as on the 30th of September should reach the Central Office from the State or Territorial Branch, by the 31st of October, each year.

Resolutions 1 and 2 above were allowed by the President to be moved by Dr. H. N. Shivapuri (Lucknow) and seconded by Dr. Yusuf Mirza (Hyderabad).

The following amended resolution as suggested by Dr. S. C. Sen (New Delhi) and Dr. Ved Prakash (New Delhi) by unanimous agreement and acceptance of the mover, was put to vote and was passed by 73 votes to 1 in a house of 104 :

"Elected Members.—Branch Representatives, Central Council.

The representations from the local branches be as follows :—

20—100—1 representative
after 100 members—1 additional representative for every 100 members or a part thereof".

The Local Branches shall pay to the Central Office Rs. 10/- per annum per representative who attends the Annual meeting of the Central Council".

In view of the above, Dr. A. P. Mittra withdrew his Resolution (No. 3 above).

Rule 31

Proposed by Dr. D. G. Ojha (Jodhpur).

"Three Vice-Presidents be elected, one from each Zone as defined in Bye-law 55 (amendments) viz. North, East and South Zones and consequential changes be made in the Rules and Bye-laws wherever necessary."

Not moved by any one—dropped.

BYE-LAWS :

Bye-law No. 7

1. *Proposed by Dr. D. G. Ojha (Jodhpur).*

"The Local Branch however shall pay a Central Fund contribution through the respective State or Territorial Branch if it exists, at the rate of Rs. 11/- per head per year for all the members on its roll with the proviso that the enhanced quota will be reserved in entirety to Building Fund for next 5 years as also the special levy of Rs. 25/- per head or Rs. 5/- per annum for next 5 years and further that the budgeted amount for travelling expenses be kept at Rs. 2/- per head for this period".

2. *Proposed by Dr. A. P. Mittra.*

"Substitute 'Rs. 12/-' for Rs. 8/- in the first paragraph and 'Rs. 6/-' for Rs. 4/- in the second paragraph".

Resolution No. 1 above by Dr. D. G. Ojha was not moved by any one—Dropped.

Dr. S. C. Sen (New Delhi) proposed, seconded by Dr. Yusuf Mirza (Hyderabad) the C.F.C. to be sent to the Central Office at the following rates :

(a) On behalf of members with up to Rs. 500/- per month income—Rs. 8/- (State Branch share Rs. 3/-)—Journal quota Re. 1/-.
(b) On behalf of members with income from Rs. 501/- to Rs. 1,000/- p.m.—Rs. 16/- (State Branch share Rs. 5/-)—Journal quota Rs. 2/-.
(c) On behalf of members with income from Rs. 1,001/- and above—Rs. 24/- (State Branch share Rs. 7/-)—Journal quota Rs. 2/-.

Dr. Sen accepted Dr. J. Majumdar's amendment to raise the share of the State/Territorial Branch to Rs. 3/-, Rs. 6/- and Rs. 9/- respectively in the above three categories with Journal share as Re. 1/-, Rs. 2/- and Rs. 3/- respectively.

Dr. Sen's proposal seconded by Dr. Yusuf Mirza as amended was put to vote and passed by 47 against 10—members present 98.

Dr. Mittra withdrew his resolution (Resolution No. 2 above).

Bye-law No. 9

Proposed by Dr. D. G. Ojha (Jodhpur).

Add after first sentence—"They shall also pay a temporary levy of Rs. 5/- per head per year as Building Fund contribution for the next five years (1957-58 to 1961-62)."

Not moved by any one—dropped.

Bye-law No. 17

1. *Proposed by Dr. D. G. Ojha (Jodhpur).*

"In case of Local Branch members, out of Rs. 11/- per member paid by the Local Branch as C.F.C. Rs. 3/- shall be credited to the State or Territorial Branch and Rs. 8/- to the Central Office and Central quota of C.F.C. out of which Re. 1/- shall be credited to the account of the Journal of the Association, Rs. 3/- to the Building

Fund, Rs. 2/- to travelling expenses account and the balance of Rs. 2/- to the General Expenses account".

2. *Proposed by Dr. A. P. Mittra, Hony. General Secretary, I.M.A.*

"In the case of Local Branch members, out of Rs. 12/- per member paid by the Local Branch as the Central Fund Contribution, Rs. 4/- shall be credited to the State or Territorial Branch and Rs. 8/- to the Central Office as the Central quota of C.F.C. out of which Re. 1/- shall be credited to the account of the Journal of the Association.

Resolution 1. Not moved—Dropped.

Resolution 2. Withdrawn by Dr. A. P. Mittra.

Bye-laws No. 18, 19 & 20

Proposed by Dr. D. G. Ojha (Jodhpur).

Consequential changes to be made if Bye-law No. 17 is agreed.

Dropped.

Bye-law No. 19

Proposed by Dr. A. P. Mittra, Hony. General Secretary.

Substitute as follows :—

"Rs. 6" for "Rs. 7" in the second line and "Rs. 6" for "Rs. 5/-" in the third line."

Withdrawn.

Bye-law No. 35

Proposed by Dr. D. G. Ojha (Jodhpur).

"100—1000—one representative

and one additional representative for each completed unit of 1000 members thereafter.

Note. This will bring it in line with representation on the Central Council".

Not moved—dropped.

Bye-law No. 36

Proposed by Dr. D. G. Ojha (Jodhpur).

"Co-opted members to be limited to only 2".

Not moved—dropped.

Bye-law No. 49

Proposed by Dr. D. G. Ojha (Jodhpur).

"Add—8. The Vice-President for the year shall be the President of the Zonal Conference, if one is organised and the Vice-President-elect shall be the President-elect of such Zonal Conference".

Not moved—dropped.

Bye-law No. 55

1. *Proposed by Dr. D. G. Ojha.*

Add—after the first paragraph :

"For the purpose of elections the State and Territorial Branches shall be grouped into these Zones viz. *North Zone* (Uttar Pradesh, Madhya Pradesh, Madhya Bharat, Delhi Territorial Branch, Punjab, Rajasthan, Direct branches. *East Zone* (Assam, Bengal, Bihar and Orissa). *South Zone* (Andhra, Madras, Mysore, Travancore & Cochin, Hyderabad ond Bombay State consistng of Maharashtra and Karnatak, Gujarat and Saurashtra, Bombay Territorial Branch and Kutch).

One Vice-President shall be elected from each zone. In order that each State or Territorial Branch may put up only one candidate. The local branches shall send in proposals through their State or Territorial Branches who shall decide at their suitable meetings the name of the candidate to be put forward for election as Vice-President. The candidate need not necessarily be from the same State.

The President shall be elected by rotation from North, South and East Zones annually. Each State or Territorial Branch of the Zone from which the Presidential candidate is due to be elected, shall put up only one candidate, but not necessarily from its own territory or State though from the same Zone. Such name should be one out of those proposed by the Local Branches under the respective jurisdiction of the State or Territorial Branch concerned and shall be elected at a suitable meeting of that Branch. The other Zones will not put up any candidates from their and other areas but will be free to propose a candidate per State or Territorial Branch from the Zone from which the Presidential candidate is due to be elected. For this purpose, the first cycle will be completed after considering the Zones from which the Presidents of the last 5 years have been elected.

No candidate who has held the office of the President or Vice-President during the preceding ten years will be eligible to stand for the same office again.

All branches will be free to vote for candidate of all Zones but not more than one vote for Presidential candidate and not more than one vote for Vice-Presidential candidate in each Zone, will be valid."

By-law 55—Election Rules

"Signatures of members present and voting must always be sent along with the Ballot Papers."

2. *As proposed by Dr. A. P. Mittra, Hony. General Secretary, Delhi.*

"The first, second and third paragraphs to be maintained in their present form.

The fourth paragraph to be deleted and the following to be substituted in its place.

'The Honorary General Secretary shall, on or before the 15th of April of every year send to each "valid" member of the Central Council, a printed and numbered Ballot Paper, signed by himself or the Secretaries at the Central Office, containing the names of the duly nominated candidates for the office of the President and Vice-Presidents. Each "valid" member of the Central Council should register his votes on the prescribed Ballot paper and return it to the Hony. General Secretary, in a sealed cover by registered post on or before the first working day after the 15th of August of the same year. Ballot papers received after this appointed date shall not be valid'.

The first paragraph to be maintained in its present form.

The first paragraph to be deleted.

3. *As proposed by the Travancore & Cochin State Branch.*

"(1) This State Branch of the I.M.A. is of opinion that insistence on payment of C.F.C. for the first half of the year on account of all the members is inconsistent with the spirit of voting right granted to individual members as per Bye-law 55 of Part III of Rules and Bye-laws. The last para may therefore be amended as follows :—

'Votes of members who have not paid their 1st half of C.F.C. before the 15th of August shall not be considered valid.'

(2) The Provincial Council of the Travancore & Cochin State Medical Association is of opinion that in the absence of adequate information about the previous history of candidates for election as President and Vice-Presidents of the Association, except for exercising their voting right to the best advantage of the Association. It is therefore resolved that the Central Working Committee should every year select a panel of not more than three names for each place to be filled by election and furnish authentic information well in advance on the following :—

1. Their previous service to the Association (State and Centre).

2. Their professional standing and attainments.

Not moved—dropped.

Bye-law 62

Proposed by Dr. A. P. Mittra, Hony. General Secretary and seconded by Dr. Ved Prakash.

"Office-bearers of the Reception Committee shall be elected from amongst and by the members of the Reception Committee who belong to the categories (a) and (b) only of Bye-law No. 60 above and shall consist of a Chairman, an Organising Secretary, a Treasurer and others as required."

Passed unanimously.

X. (b) *Consideration of Central Office circular No. 50/56-57 dated 8/8/57 re. increase in the rate of C.F.C. etc.*

The matter had already been discussed with the resolutions as above.

XI. *Resolutions brought forward by the Working Committee.*

XII. *Invitations from Local Branches for holding the 35th All-India Medical Conference.*

XIII. *Resolutions brought forward by the State/Territorial Branches.*

XIV. *Resolutions brought forward by the Local Branches.*

XV. *Resolutions brought forward by the individual members of the Association.*

Items XI to XV—Referred back to the Working Committee for necessary action.

XVI. *Any other business with the permission of the President.*

(i) The following resolution was adopted unanimously (as proposed by Dr. G. V. Joshi (Hubli) and seconded by Dr. V. K. Toraskar (Bombay) :—

"Resolved that representation of the Mysore State Branch on the Working Committee be allowed to be calculated on the basis of membership after the 1st of October after the merger (vide Rule 6) of branches with the Mysore State Branch.

Resolved further that the decision shall not be treated as a precedent."

(ii) The following resolution as proposed by Dr. M. A. Panwala (Bombay) and seconded by Dr. D. N. Ghose (Calcutta) was adopted unanimously :—

"This meeting of the Central Council requests the Employees' State Insurance Corporation and the State Governments concerned, to pay to the Insurance Medical Practitioners for the insured persons for the period for which they have been disentitled from the medical benefits and removed from the doctor's list but were eligible for medical benefits, if the proper procedures would have been followed by the parties concerned."

With a vote of thanks to the Chair, the meeting came to an end.

Sd/- C. S. THAKAR,
President.

Sd./- A. P. MITTRA,
Hony. General Secretary.

I.M.A. CENTRAL COUNCIL—*Proceedings of the 78th Ordinary Meeting of the Central Council of the Indian Medical Association held at Bangalore on the 28th December, 1957.*

MEMBERS PRESENT—1. Dr. D. V. Venkappa (Madras)—(in the Chair). 2. Dr. C. S. Thakar (Bombay)—Immediate Past President. 3. Dr. S. P. Nath (Silchar)—Senior Vice-President. 4. Dr. A. P. Mittra (New Delhi)—Honorary General Secretary. 5. Dr. P. C. Bhatia (Delhi)—Honorary Joint Secretary. 6. Dr. R. C. Goulatia (New Delhi)—Honorary Treasurer. 7. Dr. H. S. Chakravarti (Calcutta)—Honorary Assistant Editor, Journal, I.M.A. 8. Dr. S. C. Sen (New Delhi). 9. Dr. D. N. Ghosh (Calcutta). 10. Dr. M. S. Narayan Rao (Bangalore). 11. Dr. R. A. Bhagwat (Indore). 12. Dr. S. K. Sen (Calcutta). 13. Dr. B. K. Nagar (Ujjain). 14. Dr. Mrinal Nandi (Calcutta). 15 Dr. Capt. S. Ukil (Bankura). 16. Dr. P. D. Dhaftary (Ghatkopar). 17. Dr. A. P. Shukla (Ahmedabad). 18. Dr. G. V. Joshi (Hubli). 19. Dr. Arvind M. Shah (Bombay). 20. Dr. M. A. Panwala (Ghatkopar). 21. Dr. V. S. Viswanathan (Bangalore). 22. Dr. K. P. Mehrotra (Kanpur). 23. Dr. N. K. Murti (Secunderabad). 24. Dr. M. Vasudeva Rao (Hyderabad). 25. Dr. P. L. Narayan Rao (Hyderabad City). 26. Dr. Amir Chand Narula (Delhi). 27. Dr. S. Zahid Ali (Bareilly). 28. Dr. Y. D. Kapur (Faizabad). 29. Dr. M. C. Malhotra (Unnao). 30. Dr. R. K. Verma (Patna). 31. Dr. H. V. Upadhye (Dharwar). 32. Dr. G. S. Kulkarni (Gadag). 33. Dr. S. M. Rao (Kadi Kalol). 34. Dr. C. M. Patwa (Nasik). 35. Dr. S. L. Gupta (Dewas). 36. Dr. A. K. Gupta (Purulia). 37. Dr. Debesh Mukherji (Calcutta). 38. Dr. M. Surya Prakash Rao (Chittoor). 39. Dr. Souren Sen Gupta (Calcutta). 40. Dr. Anando Gopal Paul (Kandi). 41. Dr. K. P. Mittra (Fuleswar). 42. Dr. Sasanka Sekhar Chatterjee (Budge Budge). 43. Dr. Kalidas Chatterjee (Bhuj). 44. Dr. G. S. Parnaik (Malegaon City). 45. Dr. D. G. Kane (West Khanesh). 46. Dr. Haranath Mukherjee (Dhanbad). 47. Dr. P. Chatterjee (Uluberia). 48. Dr. H. K. Das (Calcutta). 49. Dr. K. Chatterjee (Barrackpore). 50. Dr. Satya Narain (Hazaribagh). 51. Dr. Satyaranjan Chatterjee (Asansol). 52. Dr. M. C. Roy Chaudhuri (Calcutta). 53. Dr. N. C. Bagchi (Dooars). 54. Dr. Kali Ganguli (Ghugudanga). 55. Dr. Gopi Krishan Chakravorti (Bagnan). 46. Dr. R. N. Roy Chaudhury (Gocharan). 57. Dr. S. N. Kelkar (Indore). 58. Dr. M. V. Ramanayya (Berhampore, Ganjam). 59. Dr. P. M. Roy (Dum Dum). 60. Dr. D. N. Basak (Calcutta). 61. Dr. Ranbir Mukherjee (Calcutta). 62. Dr. Priya Lal Ghosh (Calcutta). 63. Dr. B. Setu Rao (Nandya). 64. Dr. D. Krishna Murthi (Shimoga). 65. Dr. S. T. Puttanne (Mysore). 66. Dr. Nalin M. Seth (Dohad). 67. Dr. R. C. Thakar (Patan). 68. Dr. S. S. Guha (Shillong). 69. Dr. H. N. Dewan (Delhi). 70. Dr. K. N. Chatterjee (Bally-Belur-Liluah). 71. Dr. Bibhuti Bhushan Das (Howrah). 72. Dr. P. C. Roy (Andul). 73. Dr. Mohini Mohan Ray (Kotalpur). 74. Dr. Rabindra Nath Biswas (Panihati). 75. Dr. Raj Kumar Roy (Calcutta). 76. Dr. G. M. Chatterjee (Titagarh). 77. Dr. Salil Dutt (Bengal). 78. Dr. N. Bhattacharjee (Calcutta).

I. *Confirmation of the Proceedings of the Annual Meeting of the Central Council held at Bangalore on the 24th and 25th December, 1957.*

On a question being raised by many members, the President ruled that though the following resolution was considered and passed at the annual meeting of the Central Council it was ineffective and will not operate since it had not been circulated to Branches as under rule No. 45 of the I.M.A.

Bye-law No. 7—Subscription

(a) On behalf of members with up to Rs. 500/- per month income—Rs. 8/- (State & Territorial Branch share of Rs. 3/-).

(b) On behalf of members with income from Rs. 501/- to Rs. 1,000/- per month Rs. 16/-. State Branch share Rs. 6/-, Journal quota Rs. 2/-.

(c) On behalf of members with income from Rs. 1,001/- or above—Rs. 24/-. State Branch share Rs. 2/-, Journal quota Rs. 3/-.

The Proceedings (as circulated) were then adopted (after certain necessary typographical corrections). Proposed by Dr. M. A. Panwala (Bombay) and seconded by Dr. Souren Sen Gupta (Calcutta).

II. *Delegation of all or some of the powers of the Central Council to the Working Committee till the next Working Committee is constituted except the power of altering the Rules.*

The following resolution was proposed by Dr. Souren Sen Gupta (Calcutta) and seconded by Dr. Arvind Shah (Bombay) :

"Resolved that the Central Council of the Indian Medical Association delegates to the Working Committee all its powers and functions excepting the power of altering the Rules, till the next annual meeting of the Council, according to Rule 37 of the I.M.A."

The resolution was carried unanimously.

III. *Any other business with the permission of the President.*

(*1*) (i) Copy of letter dated 28-12-57 from Dr. N. K. Murti, President, I.M.A., Secunderabad Branch re: recognition of the new Andhra Pradesh Branch. Dr. K. N. Murti raised a series of objections which the President promised to go through and investigate.

(ii) Copy of letter dated nil from Dr. B. V. Mulay to the President I.M.A., re: amendment to C.F.C. Rule passed at the Central Council meeting held on 25th December, 1957.

(iii) Copy of letter dated 27-12-57 from Dr. B. K. Vinchure addressed to the President, I.M.A., re: amendment to Rule No. 6.

The subject matters of all the letters referred to above except No. 1 were dropped, since none of the proposers present at the meeting nor others moved the above.

(2) *Matters regarding E.S.I. Scheme.*

The following resolutions were moved by Dr. D. N. Ghosh (Calcutta) and seconded by Dr. Souren Sengupta (Calcutta) :—

(a) "The Central Council of the Indian Medical Association learns with concern the proposal to incorporate factory dispensaries in the E.S.I. Scheme to provide Medical Benefit on the same lines as provided at the clinics of Insurance Medical Practitioners in a particular implemented area of West Bengal where the Panel System has been adopted and urges upon the authorities concerned to refrain from this step affecting the basic rights of the insured workers of choosing their own doctor from the local Insurance Medical Practitioners."

It was further resolved to refer it to the Working Committee and to have a conference of the representatives on the E.S.I.C. (State and Central) at the same time.

(b) "The E.S.I. Standing Committee should function throughout the year and it shall have some E.S.I. doctors (as representatives of E.S.I. doctors) as members.

A conference of all the representatives of the Association on the different statutory bodies and committees of the E.S.I. Corporation in relation with Central and State together with representatives of the E.S.I. doctors, including scheme specialists from different implemented areas, should be held at the earliest opportunity to assess the various defects of the Scheme and difficulties encountered by the E.S.I. doctors so as to enable the representative to put the view-points of the Associations to the relevant Committees."

(3) The meeting then ended with a hearty vote of thanks to the Chair.

Sd/- D. V. VENKAPPA,
President.

Sd/- A. P. MITTRA,
Hony. General Secretary.

BRANCH NOTES

MORVI BRANCH—A meeting of the members was held on 16-2-58. Dr. V. N. Mehta presided. Dr. C. T. Mehta spoke on Cholera Epidemic at Veraval. Dr. Miss Rochlani was nominated to the Advisory Committee of the Zenana Hospital.

NIZAMABAD BRANCH—A clinical meeting of the branch was held on 21-2-58. Dr. R. M. Nadkarni presided. Fifteen members were present. Dr. Nadkarni demonstrated a case of Tetanus and Dr. A. V. Subba Rao, a Rheumatoid Arthritis case.

POONA BRANCH—A special meeting was held on 10-2-58 to condole the death of Dr. N. L. Ranade, who was a founder member and the founder secretary of the of the branch.

RAMNAD BRANCH—A meeting of the branch was held on 26-1-58. Dr. Raju Iyer presided. Dr. Venkataswamy of Erskine Hospital, Madurai, spoke on Squint and its Treatment.

SHIMOGA BRANCH—A meeting of the branch was held on 22-2-58. Dr. Lalitha Lingiah presided. Two minutes' silence was observed to pay homage to the memory of Late Moulana Abul Kalam Azad. The following subjects were discussed in the meeting (1) A case report of Bilateral Papillary Cystadenocarcinoma of the Ovary with specimen demonstration by Dr. Lalitha Lingiah, (2) A case report on Intussusception by Dr. D. Shamanna, (3) A case report on Rupture of the Uterus by Dr. T. Chandrasekhar, (4) Demonstration of Radiograms by Dr. Neelakantaradhya.

SIBSAGAR BRANCH—The members of the branch met on 29-1-58 to condole the death of Capt. Dr. H. C. Barua, an ex-president of the Assam State Branch.

SIMDEGA BRANCH—A meeting of the branch was held on 9-2-58. The members discussed the editorial on "Pay, Status and Remuneration of the Medical Men" published in the JIMA. It also considered the resolutions passed by the Bihar Branch I.M.A. at Darbhanga regarding the service of the local body medical officers, absorbed in government service.

TIRUCHY BRANCH—Clinical meetings were held on 18-1-58 and Dr. N. Vaidyanathan spoke on Tropical Eosinophilia and its Management; on 19-1-58. Dr. Atmaram Rao spoke on Cancer of the Breast; on 21-1-58, Dr. O. Francus spoke on Antenatal Care; on 23-1-58, Dr. V. Subharaman spoke on Recent Trends in Anaesthesia and Dr. P. Pankajam spoke on Family Planning; on 24-1-58 Dr. A. T. John spoke on Tuberculous Meningitis.

ULHASNAGAR BRANCH—The annual meeting of branch was held on 18-1-58. Office-bearers for 1957-58 were held with Dr. K. H. Khubchandani as president, Dr. V. Wadhwani as vice-president and Dr. H. G. Idnani as hony. secretary.

VIJAYAWADA BRANCH—The annual general body meeting of the branch was held on 9-2-58. Dr. P. Venkateswaran presided. Office-bearers for 1957-58 were elected with Dr. P. Venkateswaran as president, Dr. B. Sambamurty as vice-president and Dr. N. Satyanarayan as hony. secretary.

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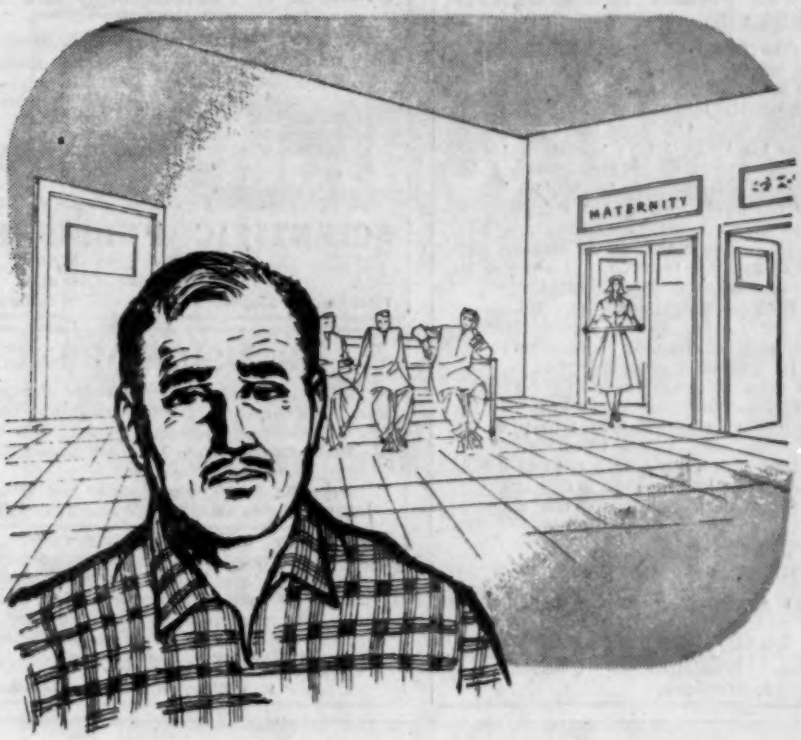

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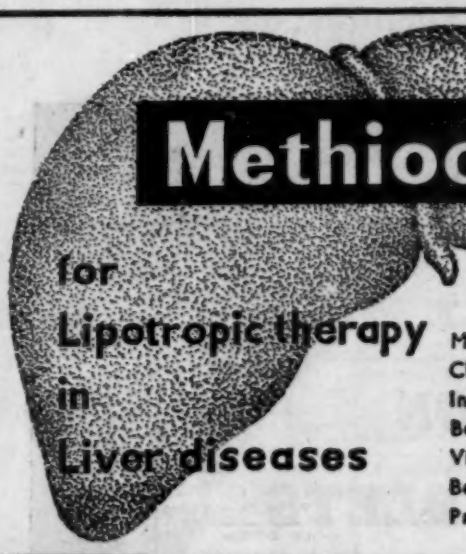

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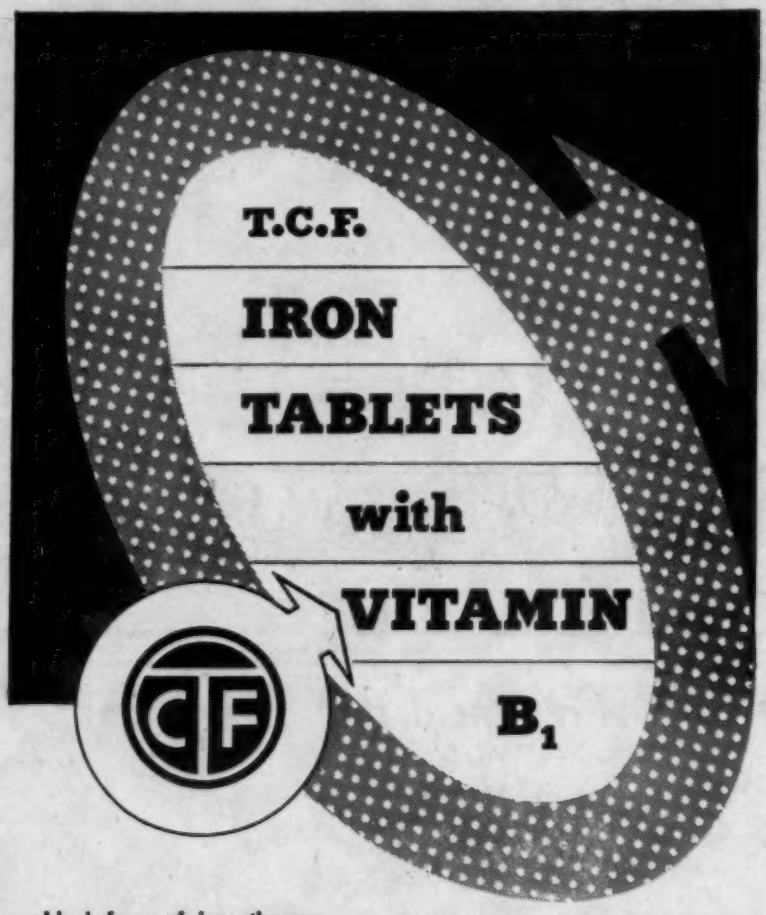

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defervescence maintained

with Synermycin defervescence is both rapid and lasting

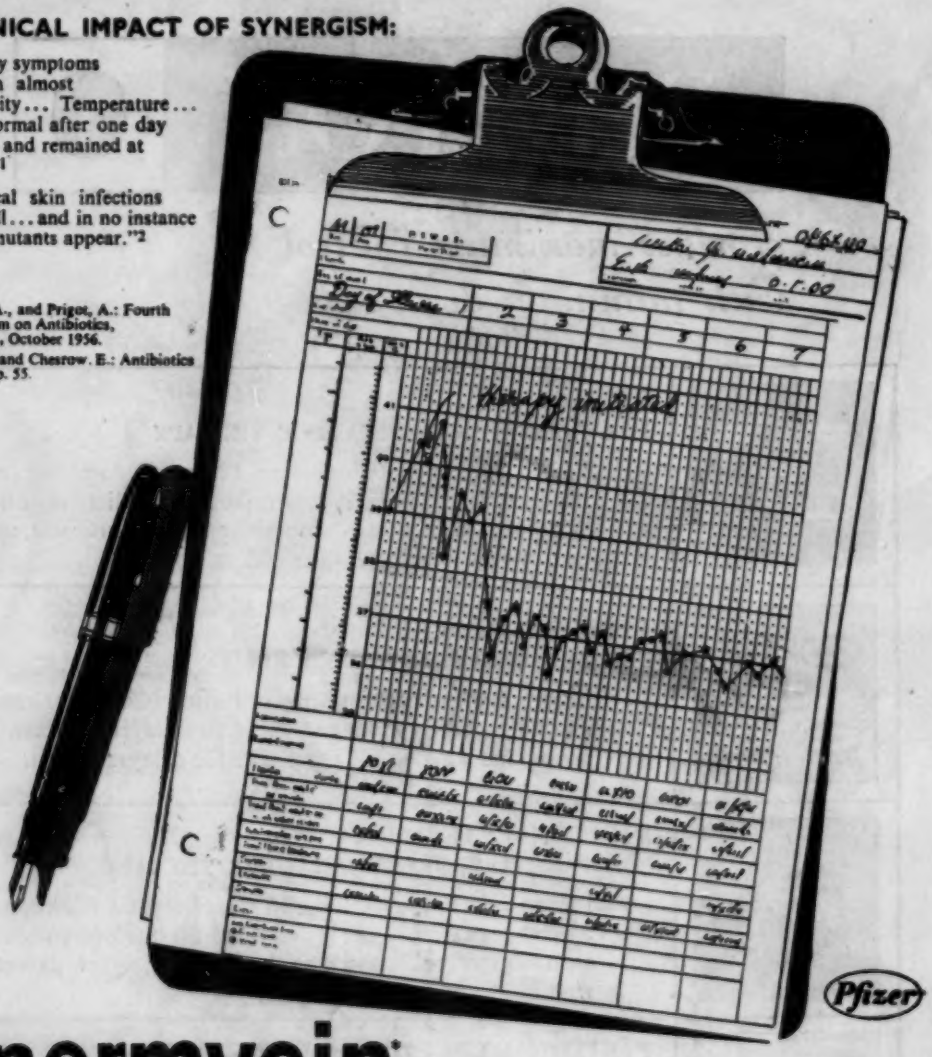
THE CLINICAL IMPACT OF SYNERGISM:

"Inflammatory symptoms subsided with almost uniform rapidity... Temperature... returned to normal after one day of medication and remained at 98.6 degrees."[1]

"Staphylococcal skin infections responded well... and in no instance did resistant mutants appear."[2]

Ref:

1. La Caille, R.A., and Prigot, A.: Fourth Annual Symposium on Antibiotics, Washington, D.C., October 1956.
2. Winton, S.S., and Chesrow, E.: Antibiotics Annual 1956-57, p. 55.



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Synermycin* mark of true broad-scope synergism

• synergistically enhanced potency • widest known antimicrobial range • overcomes pathogens resistant to other antibiotics • forestalls emergence of resistant organisms • significantly improved tolerability • wider margin of safety

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